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# Wartime Changes in Wages

September, 1914 — March, 1919

*Research Report Number 20*  
*September, 1919*

National Industrial  
Conference Board

# National Industrial Conference Board

15 BEACON STREET, BOSTON, MASS.

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# WARTIME CHANGES IN WAGES

SEPTEMBER, 1914—MARCH, 1919

1008  
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RESEARCH REPORT NUMBER 20

SEPTEMBER, 1919

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NATIONAL INDUSTRIAL CONFERENCE BOARD

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## Foreword

THE purpose of this study has been to determine the general course of wages as indicated by wartime changes in earnings of workers in several major industries of the United States.

Although based on absolute earnings, it should be emphasized that the report is primarily concerned with a consideration of relative values. No attempt has been made to discuss wages in relation to their adequacy or inadequacy with respect to the cost of living, nor to indicate whether or to what extent wages should vary with changes in the cost of living. The various comparisons of changes in living costs presented in the report are likewise on a relative basis.

This report deals only with changes occurring in wages in various industries up to the first week in March, 1919. Further increases in wages in many of these industries and also in the cost of living have since taken place.



# Wartime Changes in Wages

September, 1914,—March, 1919

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## I

### INTRODUCTION

This report presents a broad survey of the course of wages in the metal, cotton, wool, silk, boot and shoe, paper, rubber, and chemical manufacturing industries from September, 1914, to March, 1919, or approximately for the period of the European War and the period immediately following the signing of the Armistice.

The study has been based on an analysis of the movement of actual earnings rather than wage rates or computed full-time earnings. Throughout the report the wage data used for comparison represent weighted averages of hourly and weekly earnings in the different industries based on payroll figures for one week in each of the years covered by the investigation. For the years 1914 to 1918 inclusive the figures presented generally refer to the payrolls of the third week in September, while for 1919, in order to conform to the period for which the Board's cost of living data were then being assembled, the averages are based on the payrolls for the first week of March. Throughout this entire period conditions were, of course, more or less abnormal. However, the weeks selected are believed to be fairly representative of conditions generally prevailing at the time. Moreover, they contain no holidays and for the first four years they represent a period which is normally favorable to full employment. The March, 1919, figures, on the other hand, to some extent reflect the readjustment of industry to a peace-time basis which was then in progress.

Information forming the basis of the report was obtained directly from employers in the several industries, who submitted abstracts of their payrolls for the selected periods in each year considered. Total payroll averages, and also those applying to the principal occupational

groups, have been presented separately for male and female workers.

Owing to the fact that at the time requests for data were sent out conditions in industry were decidedly abnormal, considerable difficulty was experienced in securing for some of the industries as large a number of returns as was desired. Many employers, because of the accumulation of clerical work, or for other reasons, were unable to undertake the preparation of the figures requested. However, comparisons of the averages obtained in this study with those derived by other investigators dealing with larger numbers of establishments and employees show in most cases substantial agreement. The Board feels, therefore, that while averages of actual earnings as tabulated may differ in some cases from those applying to given localities, the trend indicated by the percentage changes is reasonably accurate. It should again be emphasized that the report is mainly concerned with the consideration of relative values based on conditions existing in 1914, and that for this purpose less comprehensive data are required than would be necessary for an extended discussion of absolute wages in chosen groups or localities. A number of comparisons of the Board's data with those obtained from other sources appear in the appendix.

While it has been deemed proper to present in the various tables averages of both hourly and weekly earnings, attention should be called to the fact that weekly earnings may be considerably influenced by such factors as absenteeism, labor turnover, overtime or short time, and are consequently probably less reliable than hourly earnings in tracing wage trend. Hourly earnings are not generally affected by these factors. In instances where overtime paid for at higher rates tended toward inflation in hourly earnings, proper adjustments were made, so that such figures, particularly those of time-workers, should conform closely to average hourly rates. The influences mentioned above are, however, nearly always present in some degree in averages of actual weekly earnings. This fact should be carefully borne in mind by those intending to use the figures in connection with discussion of the cost of living.

Weekly earnings, if carefully prepared, however, are, as above noted, more useful than either rates or hourly earnings in studying the income condition of the worker.



## GENERAL RESULTS

The broad facts developed by the data assembled for the different industries indicate that in most instances increases in *hourly* earnings up to September, 1918, range from 88% to more than 100%. Notable exceptions were observed in the case of male workers in the metal manufacturing industries, in which the increase for the period was only 71%, and in the boot and shoe industry, in which earnings of men and women increased only 64% and 52% respectively. However, it should be observed that in these cases the absolute hourly earnings in 1914, the base period, were already relatively high compared with those in the other industries.

Percentage increases in *weekly* earnings ranged in a majority of cases from 60% to 100%. In some instances the percentages showed marked divergence from those in the corresponding hourly earnings. In the metal industries, for example, the advance in weekly earnings of men for the period 1914 to 1918 was 103%, against 71% in hourly earnings. The marked difference in this case is due to the fact that there was considerable overtime, usually at increased wage rates, in the 1918 period, while employment conditions in 1914 were rather below normal. Somewhat greater increases in weekly than in hourly earnings of male workers were also noted in the rubber and chemical industries. In the textile industries the percentage increases in hourly and weekly earnings were practically equal. Moreover, the increases for men and women were substantially the same. Increases in the boot and shoe industry were greater for hourly than for weekly earnings in the case of men, while for women they were equal. For women in the other industries the percentage increases in weekly earnings were generally smaller than those in hourly earnings.

These differences between the percentage increases in weekly and hourly earnings in any year must obviously be due to corresponding differences in average hours worked in that period compared with those of 1914, the base period. In the textile industries, for instance, where there was close agreement in percentage changes in weekly and hourly earnings, the average hours worked remained nearly constant. On the other hand, in the metal industry, marked differences in the percentage

changes were observed owing to considerable divergence in average hours worked per week.

Averages based on payroll data of March, 1919, indicated in a majority of cases either still further increases in hourly earnings or the maintenance without substantial change of those prevailing in September, 1918. While returns for March showed that numerous reductions in work schedules had been made during the six months period, in many such cases rates were at the same time adjusted to permit of the same or even higher weekly earnings. As a matter of fact, however, marked decreases were in some cases noted in weekly earnings for March, 1919. Sometimes this can be explained by the fact that actual hours worked were considerably lower than even the reduced hours-of-work schedules. In some instances, also, even the hourly earnings, despite adjustments in rates, were lower than in the previous period, indicating an unsettled condition in the industry. This condition was doubtless largely attributable to the pause in activity following the withdrawal or completion of war contracts during which efforts made to resume peace-time production encountered many difficulties. In some cases this was apparently accompanied by a reduced productive efficiency on the part of the workers.

A comparison of relative changes in the earnings of male and female workers discloses no uniform tendency. In the textile industries the relation between absolute earnings of men and women remained substantially the same in March, 1919, as in September, 1914. In metal manufacturing the average hourly earnings of women increased more rapidly than those of men, while in boot and shoe manufacturing the earnings of men increased more rapidly than those of women during the period.

More detailed summaries of the changes in the different industries appear in the following chapters of the report.

#### EMPLOYMENT STATISTICS

Employment figures for the different industries show, in most instances, marked increases in the number of men between September, 1914, and September, 1918, and almost as marked decreases between the latter period and March, 1919. The number of women employed, on the other hand, increased quite consistently from year to year throughout the entire period.

## WAGES AND THE COST OF LIVING

Since any study of wages would be incomplete without some reference to their purchasing power as reflected in the cost of living, changes in living costs, as determined by the studies of that important subject thus far made by the Board,<sup>1</sup> have been introduced in the charts presented in Chapter X. The caution should be repeated that the cost of living curves deal with relative values. In other words, a comparison of percentage changes in wages and in the cost of living shows how far the relationship which existed between them before the war was maintained or disturbed through the war period. The comparisons do not attempt to determine whether the relationship in 1914 was a proper one. This matter is taken up in more detail in the discussion of the charts, Chapter X.

<sup>1</sup>National Industrial Conference Board, Research Reports 9, 14, 17.

## II

### METAL MANUFACTURING INDUSTRIES

Wage data for the metal manufacturing industries were secured for the 4½-year period, September, 1914,—March, 1919, from 72 identical establishments employing 35,552 male workers in the 1914 period, 71,635 in 1918, and 56,253 in 1919. These establishments were distributed over nineteen states, chiefly the North Atlantic and Middle Western. Additional data applying to less than the entire period covered by the investigation were submitted by 8 other establishments employing 9,551 males in 1918 and 5,669 in 1919.

In 13 of the 72 establishments mentioned above, women were employed throughout the entire period, the number being 669 in 1914 and 2,331 in 1918. Later in the war period women workers were introduced by 6 additional establishments, bringing the total number in 19 establishments to 3,516 in September, 1918. In March, 1919, this number had decreased to 2,572.

A marked increase in the number of workers employed between September, 1914, and September, 1918, is indicated by these figures. For males the increase during the period was 102%, while for females it was nearly 250%. Between September, 1918, and March, 1919, the number of male workers fell off 22% and the number of female workers 14%.

The data assembled for the metal manufacturing industries are presented in detail in Tables 1 to 16. The figures in Table 1 are based on payroll averages of all male workers employed in the 72 identical establishments reporting throughout the period. Table 2 contains similar data for all female workers collectively. Figures for male workers in certain occupational groups are given in Tables 3 to 16 inclusive. As between occupational groups the number of establishments varies, but the data in each group are for identical establishments. Data for female workers for the metal manufacturing industries represent so narrow a basis of ex-



perience as not to warrant presentation by occupational groups.

The tables are self-explanatory. They give first the total number of workers, next the average hours per week, then the average actual earnings, both hourly and weekly, and finally the index numbers for the hourly and weekly earnings, respectively. In constructing these index numbers, the averages for the third week in September, 1914, have in all cases been taken as representing 100; averages for each succeeding period are expressed in a percentage of this 1914 base. To determine a percentage change in earnings, it is necessary merely to subtract 100 in the case of index numbers in excess of that figure, or to take the difference between 100 and the index number where the index number falls below 100. In other words, in Table 1, an index number of 113 for weekly earnings in September, 1915, means that the earnings in the third week of that month were 13% greater than in the third week of September, 1914; while the index number of 98 for the hourly earnings in September, 1915, means that these were 2% less than in the third week of September, 1914.

## HOURLY EARNINGS

SEPTEMBER, 1914, to SEPTEMBER, 1918

Taking first the course of hourly earnings for all male workers collectively, as given in Table 1, the index numbers given in column E show that, with the exception of 1915, in which a slight decrease occurred, average hourly earnings increased consistently from year to year until in September, 1918, they were 71% above those of September, 1914. A more marked increase is shown by the index numbers of hourly earnings for female workers (column E, Table 2); the increase up to September, 1918, was 107%, the index number for this period being 207.

Turning next to hourly earnings in specific occupations, Tables 6, 8 and 16 — referring, respectively, to molders on piecework, core makers on piecework, and unskilled labor — show increases of average hourly earnings between 1914 and 1918 of 100% or more. With the exception of general foundry labor (Table 15), the increases for all the other occupational groups specified during the period were less than 90%. In general, the largest percentage increases occurred in groups in which average

absolute earnings in 1914 were relatively low. Thus, for the two unskilled occupations (Tables 15 and 16) in which average hourly earnings in 1914 were, respectively, 21.8 and 21.6 cents per hour, the increases in hourly earnings were 98% and 103%. For pattern makers (Table 10), molders on timework (Table 5), and toolmakers (Table 4), average hourly earnings in 1914 were 38.0, 36.3, and 35.6 cents per hour respectively, while percentage increases for these groups were 59%, 67%, and 56%. In the case of toolmakers, however, the number of workers employed increased nearly 200% between 1914 and 1918. It is not improbable that this large increase reduced the average skill of the force as a whole and resulted in considerable dilution of earnings of the group, thus accounting for the relatively low absolute average for 1918, as well as for the small percentage of increase during the period. The effect of similar dilution in earnings is probably present to some extent also in the averages for blacksmiths (Table 9), machine operators on piecework (Table 12), and assemblers on timework (Table 13), the number employed increasing nearly 200% in each case between September, 1914, and September, 1918.

## HOURLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

Average hourly earnings of both male and female workers continued to advance up to March, 1919; but inasmuch as the number of persons employed, both according to total payroll figures and those for the occupational groups, showed a marked decrease between the 1918 and 1919 periods considered, the increase may be only apparent. Thus, any appreciable reduction in the numbers employed, particularly if relatively low paid workers predominated among those eliminated, might tend artificially to raise the average earnings of the remainder, even though no actual increases in wages had been made.

## COMPARATIVE EARNINGS OF TIMEWORKERS AND PIECEWORKERS

An examination of changes in the earnings of molders (Tables 5 and 6), core makers (Tables 7 and 8), machine operators (Tables 11 and 12), and assemblers (Tables



13 and 14) shows that increases for the 4½-year period were greater for pieceworkers than for timeworkers. The greatest difference was found in the case of core makers (Tables 7 and 8), the increase for pieceworkers being 114% against 82% for timeworkers. In this connection it should also be observed that while in 1914 the absolute hourly earnings of pieceworkers in this group were only about 2% higher than those of timeworkers, this difference in March, 1919, had increased to 12%.

In the case of molders (Tables 5 and 6), the average hourly earnings of timeworkers in 1914 were nearly 18% higher than those of pieceworkers: 36.3 and 30.9 cents respectively. In the 1919 period, however, in consequence of a much greater increase during the period, the earnings of pieceworkers were about 3% higher than those of timeworkers: 64.2 cents as against 62.1 cents.

These comparisons indicate that the piece-rate system of wage payment was productive of higher efficiency than the time-rate system. Final conclusions should not, however be drawn from these indications, because the information received, while placing both classes of workers in the same group in each case, gave no positive evidence that their work was identical.

## WEEKLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

While total payroll averages of hourly earnings increased 71% for males and 107% for females between 1914 and 1918, average weekly earnings increased 103% and 122%, respectively, during the same period. The explanation of this divergence is found in Tables 1 and 2, by comparing the average actual hours worked in the two periods. In the 1914 payroll period the average hours worked by males were 45.5 and by females 43.3 per week; in 1918 these were 53.5 and 46.1. The difference is probably explained by the fact that employment in the industry was somewhat below normal in 1914, while in 1918 nearly all establishments were operating on full schedules, with many even running overtime, for which higher rates were paid.

Data for weekly earnings in the different occupational groups showed a similar tendency toward greater increases in these than in hourly earnings for the period.

## WEEKLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

A comparison of total payroll averages of weekly earnings of both males and females for the September, 1918, and March, 1919, periods indicates some reduction in activity following the signing of the armistice. Weekly earnings of males decreased about 8%, while hourly earnings increased slightly. Average hours worked in the 1918 and 1919 periods were 53.5 and 49, respectively. For female workers weekly earnings showed a slight increase, the average hours worked in the two periods being practically the same, and hourly earnings having increased somewhat.

### SUMMARY FOR METAL TRADES

In summary it may be stated that for these metal trades establishments, average hourly earnings, which probably coincided closely to average rates, increased 74% in the case of male workers and 111% for female workers during the 4½ years considered.

Hourly earnings in the specified occupational groups of male workers were in a majority of cases higher than those indicated by the general averages applying to all male workers collectively. The largest increases were, in general, noted in the earnings of pieceworkers, and in most instances the absolute earnings were also higher for the latter in both the 1914 and 1919 periods than for timeworkers in the same groups. It may be noted that the occupational groups for which data are presented include a substantial proportion of all the workers included in the total payroll averages.

The data assembled show also that the absolute earnings of both male and female workers in this industry were consistently among the highest reported for any of the eight industries covered by the investigation.

### CHARTS

Chart 1: The curves on this chart were constructed from index numbers in Tables 1 and 2, and show the relative rates of increase in hourly and weekly earnings of both male and female workers during the period covered by the investigation. The outstanding feature of the chart is the location of each curve of weekly earnings

above the corresponding curve of hourly earnings. As has already been explained, this divergence is due to the smaller number of average hours actually worked in the 1914 period, as compared with those of the later years. In the case of male workers the overtime factor makes the divergence greater than for female workers.

Charts 2 and 3 are bar diagrams showing comparisons, respectively, of average absolute hourly and weekly earnings of men and women.

Chart 4 compares the rates of increase in hourly earnings of male workers in three highly paid groups (Tables 4, 5 and 10) and two low paid groups (Tables 15 and 16). It will be observed that the earnings of the low paid occupations increased more in proportion during the period than those of the higher paid groups.

Chart 5 shows comparisons of average absolute hourly earnings for the three higher paid groups (Tables 4, 5 and 10) and the two low paid groups (Tables 15 and 16).

METAL MANUFACTURING INDUSTRIES: SUMMARIES OF PAYROLL  
AVERAGES FOR ALL MALE AND FEMALE WORKERS AND FOR  
SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER, 1914,—  
MARCH, 1919

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 72 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	35,552	45.5	\$ .289	\$13.18	100	100
Sept., 1915	43,696	52.1	.282	14.90	98	113
Sept., 1916	55,924	53.8	.317	17.22	110	131
Sept., 1917	64,156	53.6	.371	20.09	128	152
Sept., 1918	71,635	53.5	.495	26.80	171	203
March, 1919	56,253	49.0	.502	24.75	174	188

**TABLE 2. Total Payroll Data: Females — 13 Establishments**

Sept., 1914	669	43.3	.149	6.45	100	100
Sept., 1915	926	46.1	.169	7.82	113	121
Sept., 1916	1,767	45.8	.194	8.92	130	138
Sept., 1917	1,741	47.3	.223	10.55	150	164
Sept., 1918	2,331	46.1	.309	14.35	207	222
March, 1919	2,006	46.0	.314	14.50	211	225

**TABLE 3. Machinists — Timework: Males — 51 Establishments**

Sept., 1914	2,937	52.5	.324	17.10	100	100
Sept., 1915	4,122	56.0	.331	18.75	102	110
Sept., 1916	4,787	56.5	.373	21.38	115	125
Sept., 1917	5,105	55.4	.436	24.79	135	145
Sept., 1918	5,503	54.0	.572	31.49	177	184
March, 1919	5,235	52.4	.587	31.18	181	182

**TABLE 4. Toolmakers — Timework: Males — 21 Establishments**

Sept., 1914	479	49.2	.356	17.60	100	100
Sept., 1915	563	50.4	.377	19.20	106	109
Sept., 1916	843	54.8	.402	22.35	113	127
Sept., 1917	1,155	54.5	.456	25.30	128	144
Sept., 1918	1,332	54.6	.557	30.85	156	175
March, 1919	907	49.6	.594	29.55	167	168

**TABLE 5. Molders — Timework: Males — 30 Establishments**

Sept., 1914	568	43.6	.363	15.91	100	100
Sept., 1915	782	52.2	.363	19.16	100	120
Sept., 1916	857	52.0	.405	21.27	112	134
Sept., 1917	956	52.4	.462	24.39	127	153
Sept., 1918	909	53.0	.606	32.65	167	205
March, 1919	682	46.5	.621	28.99	171	182

**TABLE 6. Molders — Piecework: Males — 25 Establishments**

Sept., 1914	1,033	46.4	.309	14.20	100	100
Sept., 1915	1,137	52.5	.340	17.82	110	125
Sept., 1916	1,164	51.0	.414	21.10	134	149
Sept., 1917	1,135	50.1	.503	25.18	163	177
Sept., 1918	1,010	51.2	.666	34.12	215	240
March, 1919	1,089	46.9	.642	30.17	208	212



METAL MANUFACTURING INDUSTRIES—(*continued*): SUMMARIES  
OF PAYROLL AVERAGES FOR ALL MALE AND FEMALE WORKERS  
AND FOR SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER,  
1914,—MARCH, 1919

(National Industrial Conference Board)

**TABLE 7. Core Makers — Timework: Males — 29 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	236	46.8	\$ .297	\$13.95	100	100
Sept., 1915	288	52.2	.297	15.77	100	113
Sept., 1916	295	53.3	.333	17.86	112	128
Sept., 1917	371	53.2	.382	20.50	129	147
Sept., 1918	303	52.2	.518	27.41	174	196
March, 1919	254	45.8	.541	24.91	182	179

**TABLE 8. Core Makers — Piecework: Males — 10 Establishments**

Sept., 1914	184	44.6	.304	13.51	100	100
Sept., 1915	208	51.8	.318	16.45	105	122
Sept., 1916	231	49.7	.429	21.30	141	158
Sept., 1917	225	50.8	.510	25.90	168	192
Sept., 1918	208	55.6	.688	38.30	226	283
March, 1919	183	46.8	.651	30.45	214	225

**TABLE 9. Blacksmiths — Timework: Males — 29 Establishments**

Sept., 1914	179	51.0	.328	16.95	100	100
Sept., 1915	184	54.3	.335	18.38	102	108
Sept., 1916	290	54.8	.385	21.61	117	128
Sept., 1917	412	55.7	.468	27.10	143	160
Sept., 1918	542	59.6	.557	34.29	170	202
March, 1919	269	50.8	.592	30.90	182	182

**TABLE 10. Pattern Makers — Timework: Males — 42 Establishments**

Sept., 1914	393	48.0	.380	18.33	100	100
Sept., 1915	448	50.1	.371	19.45	98	106
Sept., 1916	521	51.6	.409	21.15	108	115
Sept., 1917	488	52.1	.495	25.92	130	141
Sept., 1918	419	52.8	.603	32.15	159	175
March, 1919	429	49.5	.638	31.75	168	173

**TABLE 11. Machine Operators — Timework: Males — 25 Establishments**

Sept., 1914	1,771	49.1	.265	13.15	100	100
Sept., 1915	2,297	52.1	.271	14.34	102	109
Sept., 1916	3,001	52.2	.299	15.95	113	121
Sept., 1917	3,187	51.6	.346	18.20	131	138
Sept., 1918	3,176	50.6	.454	23.60	171	180
March, 1919	2,352	48.4	.461	22.50	174	171

**TABLE 12. Machine Operators — Piecework: Males — 13 Establishments**

Sept., 1914	1,382	48.2	.325	15.70	100	100
Sept., 1915	1,478	52.0	.313	16.26	96	104
Sept., 1916	2,541	55.6	.356	19.79	109	126
Sept., 1917	3,502	56.0	.412	23.10	126	147
Sept., 1918	4,112	58.0	.551	31.91	170	203
March, 1919	1,772	46.6	.577	26.90	178	171

METAL MANUFACTURING INDUSTRIES—(continued): SUMMARIES  
OF PAYROLL AVERAGES FOR ALL MALE AND FEMALE WORKERS  
AND FOR SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER,  
1914, — MARCH, 1919

(National Industrial Conference Board)

**TABLE 13. Assemblers — Timework: Males — 18 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	963	49.0	\$ .307	\$15.15	100	100
Sept., 1915	1,244	51.6	.307	15.90	100	105
Sept., 1916	2,250	54.4	.350	19.26	114	127
Sept., 1917	3,031	56.5	.415	22.62	135	149
Sept., 1918	2,719	54.0	.502	27.65	164	182
March, 1919	2,159	49.3	.530	26.30	173	174

**TABLE 14. Assemblers — Piecework: Males — 8 Establishments**

Sept., 1914	472	41.9	.307	12.85	100	100
Sept., 1915	470	49.2	.325	16.02	106	125
Sept., 1916	524	48.8	.350	17.07	114	133
Sept., 1917	540	48.2	.411	19.80	134	154
Sept., 1918	554	49.2	.558	27.49	181	214
March, 1919	679	46.3	.603	27.91	196	217

**TABLE 15. Foundry Labor — Timework: Males — 35 Establishments**

Sept., 1914	1,375	51.4	.218	11.32	100	100
Sept., 1915	1,815	53.8	.220	12.11	101	107
Sept., 1916	2,193	52.9	.263	14.10	121	124
Sept., 1917	2,412	53.3	.316	17.05	145	151
Sept., 1918	2,072	53.7	.431	23.60	198	208
March, 1919	1,490	51.4	.425	22.15	195	196

**TABLE 16. Unskilled Labor — Timework: Males — 52 Establishments**

Sept., 1914	4,128	51.3	.216	11.14	100	100
Sept., 1915	4,771	52.0	.229	12.00	106	108
Sept., 1916	6,895	51.7	.279	14.60	129	131
Sept., 1917	8,578	55.4	.313	17.56	145	158
Sept., 1918	8,532	53.2	.438	23.73	203	213
March, 1919	7,165	50.9	.426	22.00	197	198

#### Additional Data

Tables 17 to 31 inclusive contain data for September, 1918, and March, 1919, similar to those of Tables 1 to 16 inclusive, except that data from a number of establishments reporting for less than the entire period have been included, thus broadening the basis of experience for these periods.

It will be noticed that the averages contained in the complete tables for these periods have, in most instances, been only slightly affected by the inclusion of the additional data.



METAL MANUFACTURING INDUSTRIES—(*continued*): SUMMARIES  
OF PAYROLL AVERAGES FOR ALL MALE AND FEMALE WORKERS  
AND FOR SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER,  
1918, — MARCH, 1919

(National Industrial Conference Board)

**TABLE 17. Total Payroll Data: Males — 80 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1918	81,186	53.4	\$ .498	\$26.95	100	100
March, 1919	61,922	48.5	.505	24.60	101	91

**TABLE 18. Total Payroll Data: Females — 19 Establishments**

Sept., 1918	3,516	46.8	.311	14.51	100	100
March, 1919	2,572	45.9	.320	14.72	103	101

**TABLE 19. Machinists — Timework: Males — 60 Establishments**

Sept., 1918	5,908	53.8	.567	31.10	100	100
March, 1919	5,594	51.9	.583	30.70	103	99

**TABLE 20. Toolmakers — Timework: Males — 28 Establishments**

Sept., 1918	2,040	55.5	.554	31.40	100	100
March, 1919	1,372	48.6	.612	29.90	110	95

**TABLE 21. Molders — Timework: Males — 36 Establishments**

Sept., 1918	1,103	52.4	.603	32.10	100	100
March, 1919	848	44.7	.615	27.60	102	86

**TABLE 22. Molders — Piecework: Males — 31 Establishments**

Sept., 1918	1,239	50.7	.663	33.60	100	100
March, 1919	1,234	45.4	.644	29.25	97	87

**TABLE 23. Core Makers — Timework: Males — 36 Establishments**

Sept., 1918	411	50.7	.513	26.22	100	100
March, 1919	336	41.9	.534	22.42	104	86

**TABLE 24. Core Makers — Piecework: Males — 12 Establishments**

Sept., 1918	242	54.6	.684	37.30	100	100
March, 1919	197	45.8	.652	29.85	95	80

METAL MANUFACTURING INDUSTRIES—(*continued*): SUMMARIES  
OF PAYROLL AVERAGES FOR ALL MALE AND FEMALE WORKERS  
AND FOR SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER,  
1918, — MARCH, 1919

(National Industrial Conference Board)

**TABLE 25. Blacksmiths — Timework: Males — 34 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1918	657	56.8	\$ .547	\$32.00	100	100
March, 1919	365	50.1	.582	29.70	106	93

**TABLE 26. Pattern Makers — Timework: Males — 40 Establishments**

Sept., 1918	458	52.4	.606	32.15	100	100
March, 1919	464	49.3	.640	31.80	105	99

**TABLE 27. Machine Operators — Timework: Males — 31 Establishments**

Sept., 1918	3,783	51.0	.447	23.45	100	100
March, 1919	2,902	48.3	.458	22.35	103	95

**TABLE 28. Machine Operators — Piecework: Males — 16 Establishments**

Sept., 1918	7,510	56.8	.584	33.10	100	100
March, 1919	2,614	43.8	.591	25.90	101	78

**TABLE 29. Assemblers — Timework: Males — 22 Establishments**

Sept., 1918	3,252	53.3	.496	26.95	100	100
March, 1919	2,601	48.7	.522	25.58	105	95

**TABLE 30. Foundry Labor — Timework: Males — 42 Establishments**

Sept., 1918	2,359	53.3	.430	23.35	100	100
March, 1919	1,809	50.3	.429	21.85	100	94

**TABLE 31. Miscellaneous Labor — Timework: Males — 63 Establishm'ts**

Sept., 1918	10,421	52.3	.429	22.85	100	100
March, 1919	8,492	51.7	.435	22.59	101	99

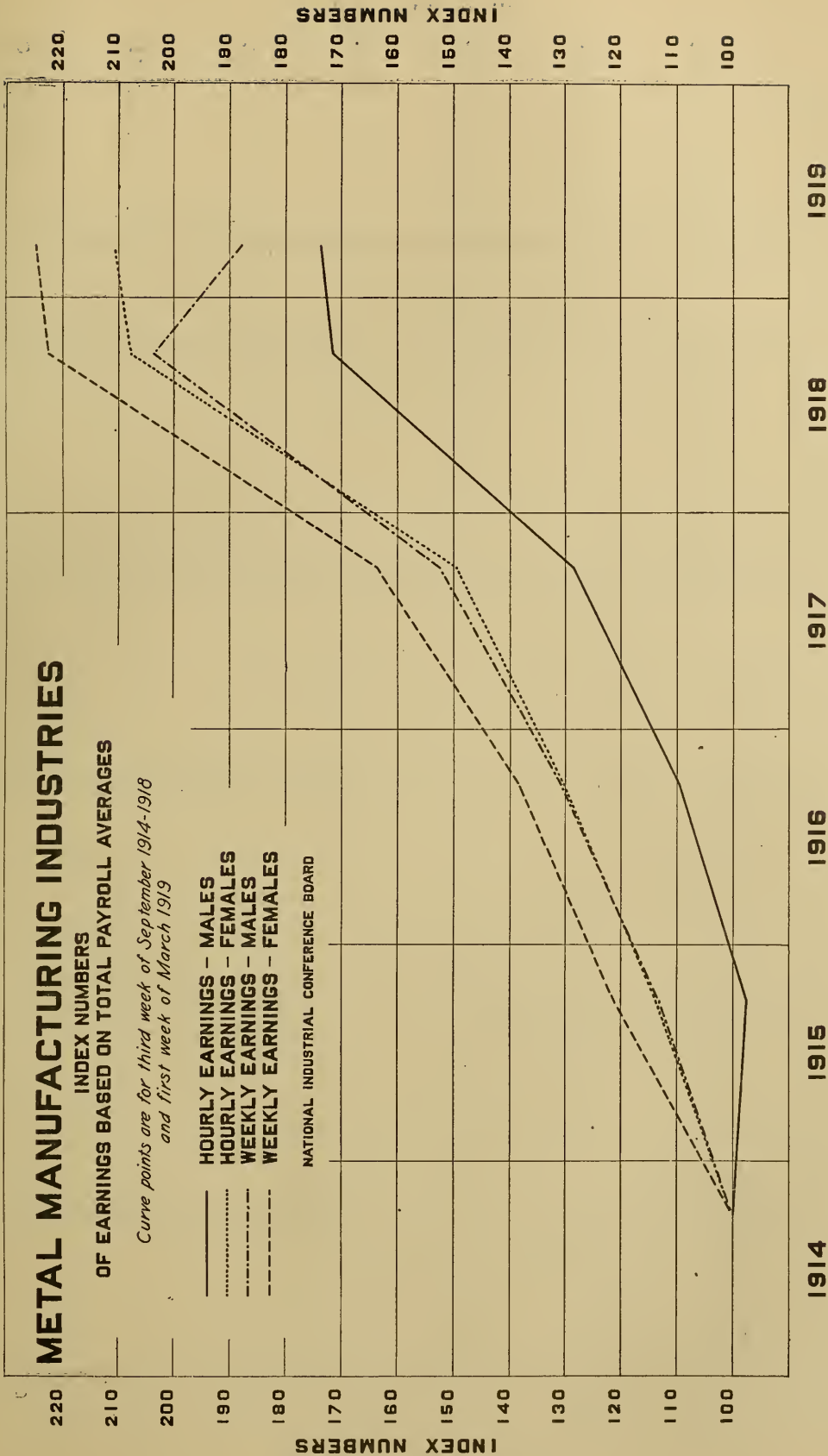


Chart 2, National Industrial Conference Board, Research Report No. 20

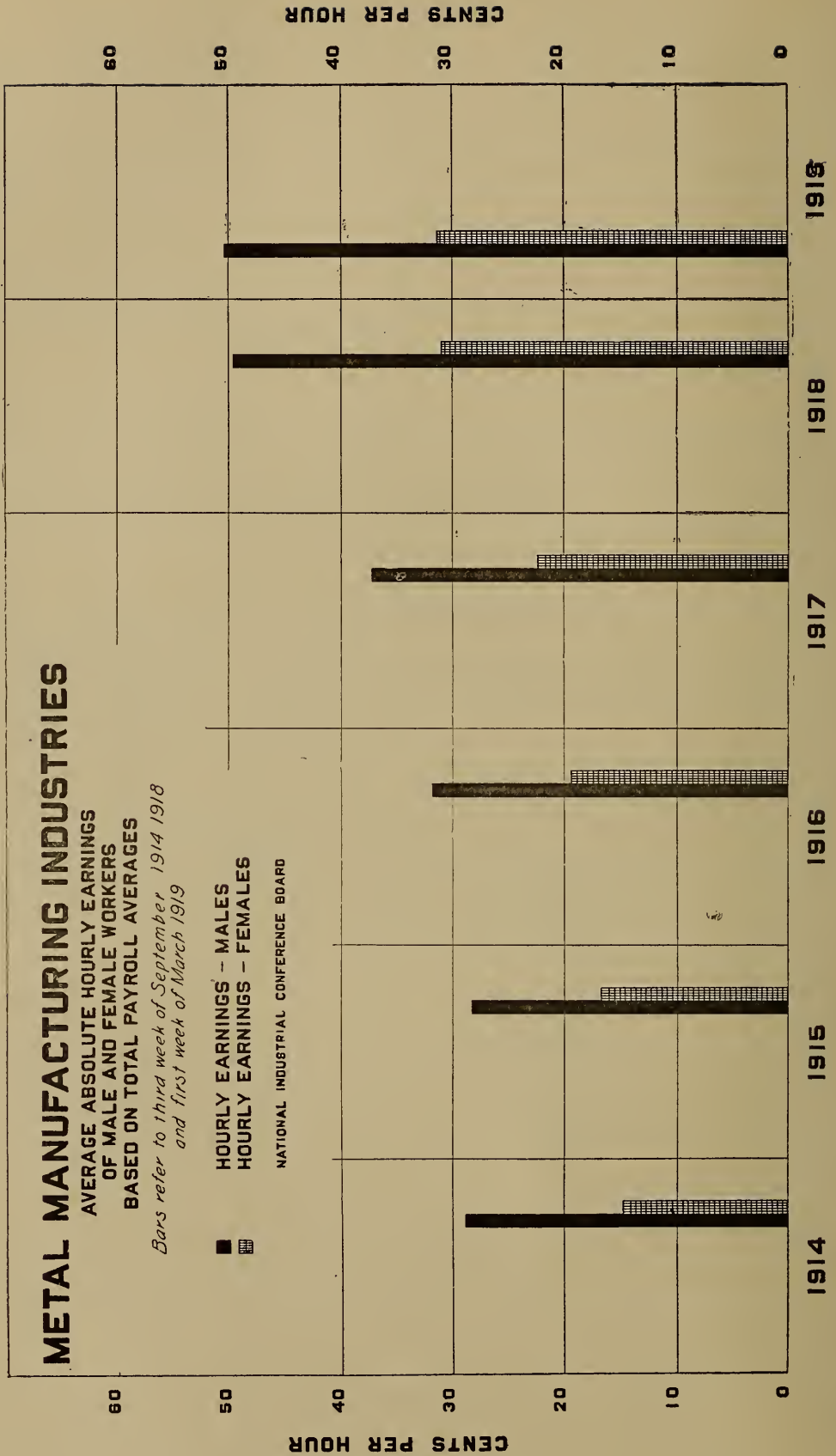


Chart 3, National Industrial Conference Board, Research Report No. 20

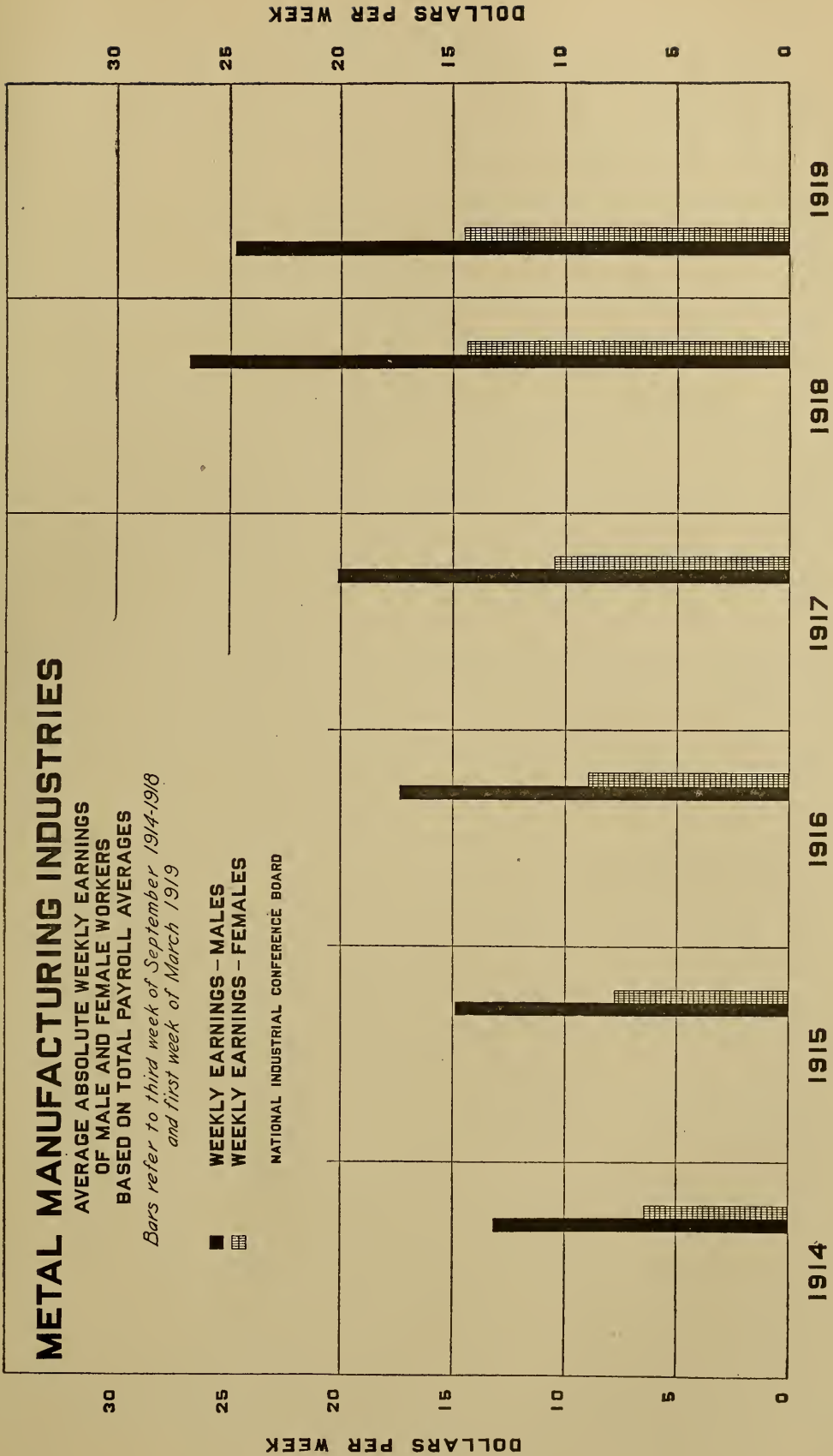




Chart 4, National Industrial Conference Board, Research Report No. 20

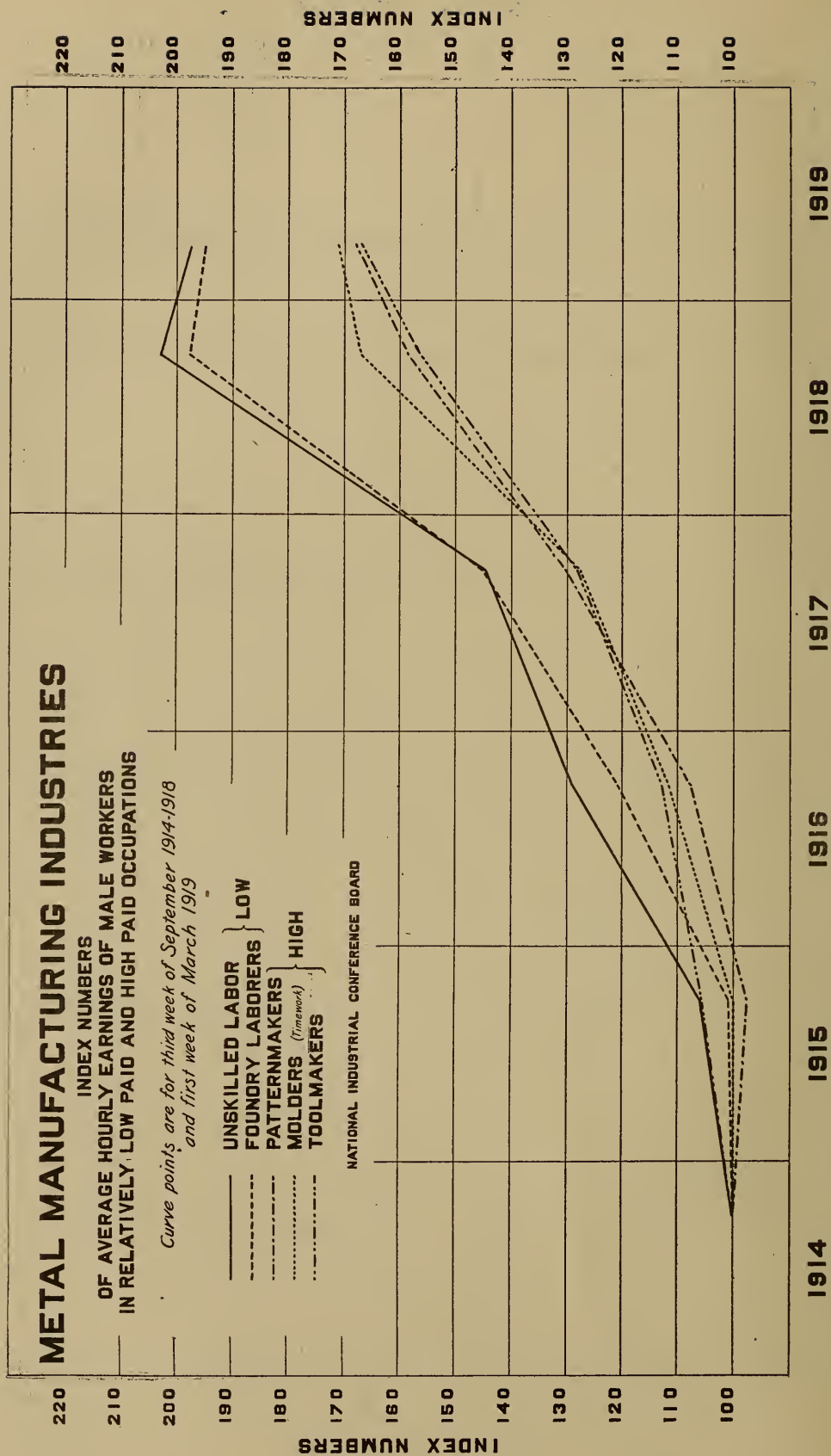
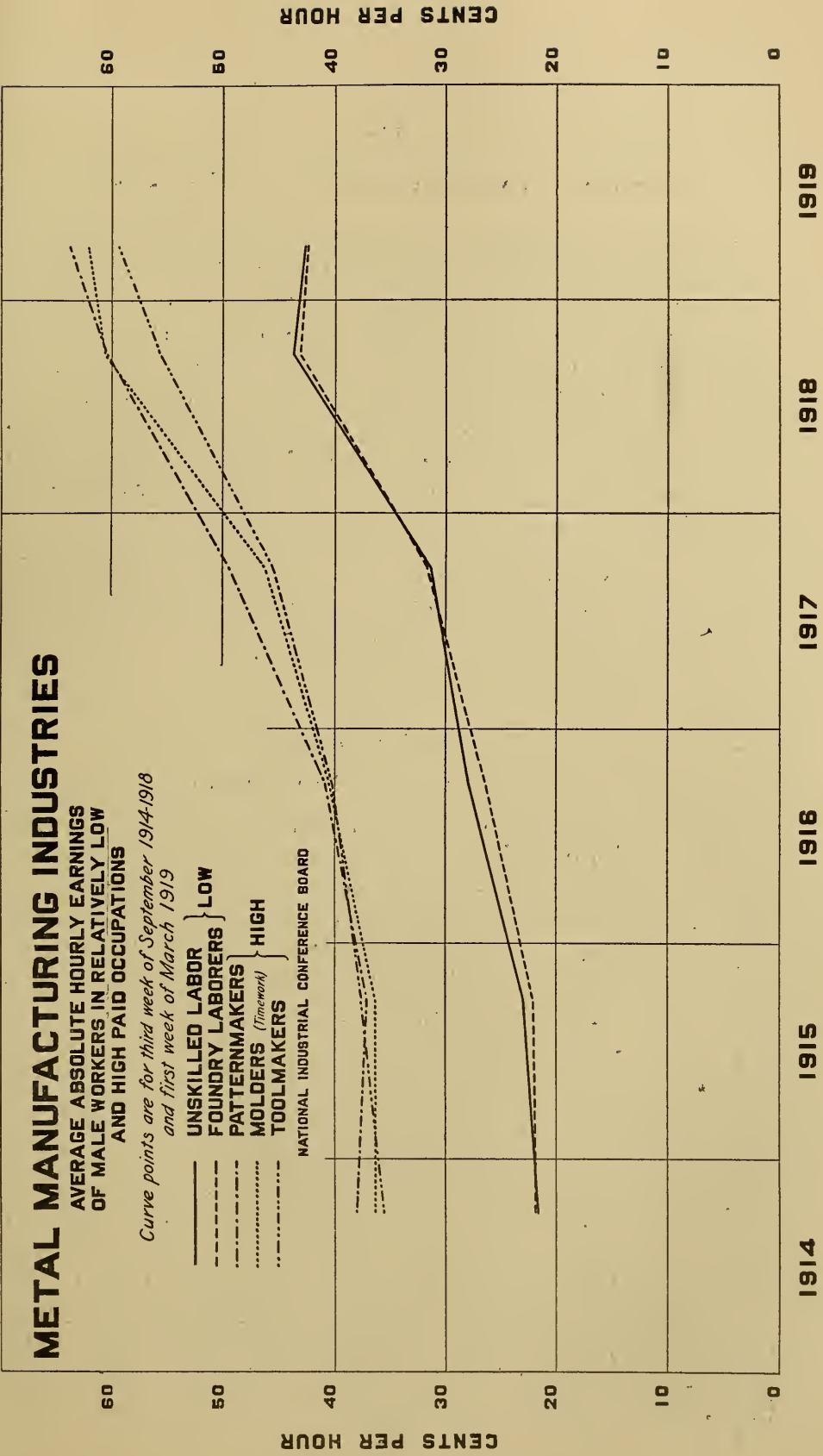




Chart 5, National Industrial Conference Board, Research Report No. 20



### III

#### COTTON MANUFACTURING INDUSTRY

Averages of earnings of workers in the cotton manufacturing industry are based on returns from 15 identical Northern mills reporting for the entire period covered by the investigation. These mills employed 5,187 male and 4,924 female workers in the 1914 payroll period. In September, 1918, the number of men had decreased to 4,925, while the number of women had increased to 5,138. Between September, 1918, and March, 1919, the number of male workers increased to 5,797, while the number of female workers rose to 5,943.

Detailed comparisons for the cotton manufacturing industry are given in Tables 1 to 22. These are constructed in the same manner as those for the metal manufacturing industries in Chapter I.

#### HOURLY EARNINGS

##### SEPTEMBER, 1914, TO SEPTEMBER, 1918

Tables 1 and 2, based on averages of all workers in 15 identical mills, irrespective of occupation, show that hourly earnings of men and women increased 104% and 100%, respectively, during the period. Average absolute hourly earnings of males were 18.9 cents in September, 1914, and 38.5 cents in 1918; those of females were 15.2 cents and 30.4 cents.

In five occupational groups of male workers, time-workers in opening and picking (Table 3), carders on both piece and time work (Tables 4 and 5), spinners on piecework (Table 7), weavers on piecework (Table 10), hourly earnings increased more than 110% during the war period; in two others, spinners on timework (Table 6) and weavers on timework (Table 9), the increases were 105% and 103%. In only three instances, timeworkers in spooling, warping and twisting (Table 8), loom-fixers (Table 11), and miscellaneous unskilled (Table 12), were the increases less than 100% and these were over 90%.

The highest absolute average hourly earnings of any group in 1914 and 1918 were received by loom-fixers (Table 11), 26.2 cents and 51.4 cents, respectively. The lowest absolute average earnings of any group were those of workers in opening and picking (Table 3) — 15.8 cents per hour — and even with the increase of 114% the earnings of this group in 1918 were still among the lowest.

In three groups employing both timeworkers and pieceworkers, namely carding, spinning, and weaving (Tables 4, 5, 6, 7, 9, and 10), earnings of pieceworkers were higher in both periods than those of timeworkers. In the case of one of these — carding on piecework — the percentage increase between 1914 and 1918 of 134% was the highest received by any group of male workers in this industry.

Increases in hourly earnings of female workers in the different occupational groups were in most cases smaller than those of male workers in those groups. In the carding department, for example, women received increases of 86% and 88% for timework and piecework, respectively, against 119% and 134% for men. Increases for female workers in spooling, warping and twisting averaged 74% during the war period, while earnings of males in those groups increased 98%. Absolute average hourly earnings of women, based on total payroll averages, were about 20% lower than those of men throughout the entire period. In certain occupations employing both male and female workers the difference in actual earnings was even more marked. In the case of spinners on piecework (Tables 7 and 17), for example, average hourly earnings of men were more than 25% higher than those of women, and in carding (Tables 5 and 14) the earnings of male pieceworkers, while only 16% higher than those of women in 1914, were more than 40% higher in 1918. In weaving (Tables 9 and 20), male and female timeworkers received nearly equal earnings per hour in 1914 and in 1918, but on piecework (Tables 10 and 21) men averaged 27½% more than women in 1914 and nearly 15% more in 1918.

#### HOURLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

Average hourly earnings of both male and female workers, as shown by total payroll figures (Tables 1 and

2), increased slightly between September, 1918, and March, 1919, bringing percentages increases for the entire period up to 106% for men and 105% for women. Data for the different occupational groups specified show decreases in as many cases as increases.

### WEEKLY EARNINGS

#### SEPTEMBER, 1914, TO SEPTEMBER, 1918

Average weekly earnings of male workers (Table 1) in this industry showed an increase of 106% as compared with 104% for hourly earnings. This relation is practically the same as that in the average hours worked per week in the 1914 and 1918 period, 52.9 and 53.7, respectively. In the case of women (Table 2) the increase of 100% in weekly earnings during the period coincided with that in hourly earnings. The average hours in this case were 50.9 in 1914 and 50.4 in 1918.

In terms of absolute earnings, those of men were considerably higher than the averages for women throughout the entire period. In 1914 the averages for men and women were \$10.00 and \$7.70 per week, respectively, while in 1918 they were \$20.60 and \$15.37.

While, according to total payroll averages, percentage increases in weekly and hourly earnings of male workers were about the same, figures for the separate occupational groups show increases in weekly averages in several instances somewhat higher than those of hourly earnings. For female workers, on the other hand, increases in most cases were slightly smaller for weekly than for hourly earnings.

### WEEKLY EARNINGS

#### SEPTEMBER, 1918, TO MARCH, 1919

Averages of weekly earnings of both male and female workers based on total payroll data (Tables 1 and 2) for the March, 1919, period, were 17% lower than those of September, 1918. The earnings of men decreased from \$20.60 to \$17.10 per week, while those of women fell from \$15.37 to \$12.75 per week.

Comparisons of changes in weekly earnings in the different occupational groups show that in most cases percentage decreases were greater for male than for



female workers. In six groups, embracing 2,378 male workers in 1918, and representing nearly 50% of the total number of males reported upon in Table 1, and in four groups of female workers employing 2,305 females in 1918, about 45% of all reported upon, the decreases during the period were 20% or more.

The lowest absolute earnings received by any group of males in March, 1919, were those in spinning on timework (Table 6), the weekly averages being \$13.55, or 21% below the average for all male workers. The group was small, however, representing only slightly more than 9% of all male workers in the reporting establishments. The lowest absolute weekly earnings among female workers in March, 1919, were those in carding, on timework (Table 13). This group represented 2.2% of the total number of women reported upon. The average in this case was \$8.96, or 30% lower than the average for all females covered by the data received, and 40% lower than for weavers on timework (Table 20), the group having the highest absolute earnings.

### SUMMARY

The data analyzed indicate that for the cotton industry as a whole hourly earnings of male workers collectively increased 104% between the September, 1914, and September, 1918, and 106% for the entire 4½ years covered by the study. For female workers these earnings increased 100% and 105%, respectively. During the period September, 1914, to September, 1918, weekly earnings of both men and women increased in practically the same proportion as did hourly earnings. The increases for the 4½ years covered were, however, less for weekly than for hourly earnings, owing to a substantial decrease in average hours worked in the March, 1919, period. These percentages were 71% for men and 66% for women.

### CHARTS

Chart 6, constructed from index numbers of hourly and weekly earnings in Tables 1 and 2, shows the relative rates of increase in the earnings of male and female workers. The fact that the four curves lie near together indicate that hourly and weekly earnings, and also those for men and women, increased at practically the same

rate up to September, 1918. The sharp drop in the curves for weekly earnings between September, 1918, and March, 1919, of both male and female workers, reflects the lower average of hours worked in 1919, when the industry was going through a period of readjustment from war to peace time production.

Chart 7 is a bar diagram representing comparisons of average absolute hourly earnings of men and women in the industry, based on total payroll averages in Tables 1 and 2.

Chart 8 is similarly constructed from Tables 1 and 2 to show comparisons of absolute weekly earnings of male and female workers.



**COTTON MANUFACTURING INDUSTRY: SUMMARIES OF PAYROLL  
AVERAGES FOR ALL MALE AND FEMALE WORKERS AND FOR  
SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER, 1914,—  
MARCH, 1919**

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 15 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	5,187	52.9	\$ .189	\$10.00	100	100
Sept., 1915	5,736	53.0	.189	10.05	100	101
Sept., 1916	5,650	53.5	.221	11.85	117	119
Sept., 1917	5,842	50.7	.280	14.22	148	142
Sept., 1918	4,925	53.7	.385	20.60	204	206
March, 1919	5,797	43.9	.389	17.10	206	171

**TABLE 2. Total Payroll Data: Females — 15 Establishments**

Sept., 1914	4,924	50.9	.152	7.70	100	100
Sept., 1915	5,166	51.8	.152	7.89	100	103
Sept., 1916	5,052	51.8	.186	9.65	122	125
Sept., 1917	5,202	51.0	.222	11.36	146	147
Sept., 1918	5,138	50.4	.304	15.37	200	200
March, 1919	5,943	41.0	.312	12.75	205	166

**TABLE 3. Opening and Picking — Timeworkers: Males — 10 Estab.**

Sept., 1914	158	53.1	.158	8.40	100	100
Sept., 1915	173	54.9	.159	8.70	101	103
Sept., 1916	181	54.2	.190	10.29	120	122
Sept., 1917	196	51.2	.238	12.15	150	145
Sept., 1918	177	54.8	.339	18.60	214	222
March, 1919	164	41.7	.349	14.55	221	173

**TABLE 4. Carding — Timeworkers: Males — 13 Establishments**

Sept., 1914	508	51.5	.172	8.85	100	100
Sept., 1915	530	53.5	.168	8.98	98	102
Sept., 1916	588	52.9	.205	10.85	118	122
Sept., 1917	627	51.3	.248	12.74	144	144
Sept., 1918	524	51.7	.377	19.50	219	220
March, 1919	418	43.8	.352	15.44	205	175

**TABLE 5. Carding — Pieceworkers: Males — 8 Establishments**

Sept., 1914	136	49.0	.187	9.17	100	100
Sept., 1915	147	53.2	.177	9.40	95	103
Sept., 1916	180	48.8	.228	11.14	122	121
Sept., 1917	179	47.4	.282	13.38	151	146
Sept., 1918	115	49.1	.437	21.45	234	235
March, 1919	115	44.1	.380	16.75	203	183

**TABLE 6. Spinning — Timeworkers: Males — 8 Establishments**

Sept., 1914	537	53.4	.166	8.58	100	100
Sept., 1915	553	52.6	.170	8.96	103	101
Sept., 1916	617	51.2	.198	10.16	120	118
Sept., 1917	607	53.2	.263	14.01	159	163
Sept., 1918	561	53.4	.339	18.10	205	211
March, 1919	528	39.5	.343	13.55	207	153

COTTON MANUFACTURING INDUSTRY — (*continued*): SUMMARIES  
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1914,— MARCH, 1919

(National Industrial Conference Board)

**TABLE 7. Spinning — Pieceworkers: Males — 5 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	267	47.7	.190	9.04	100	100
Sept., 1915	304	52.7	.188	9.89	99	109
Sept., 1916	285	52.9	.239	12.64	126	140
Sept., 1917	263	46.6	.295	13.75	156	152
Sept., 1918	186	49.0	.422	20.63	222	228
March, 1919	217	40.6	.401	16.28	211	180

**TABLE 8. Spooling, Warping, Twisting — Timeworkers: Males — 9 Estab.**

Sept., 1914	320	54.0	.176	9.50	100	100
Sept., 1915	328	51.0	.179	9.13	102	96
Sept., 1916	337	55.2	.204	11.29	116	119
Sept., 1917	348	51.2	.264	13.50	150	142
Sept., 1918	273	54.1	.349	18.87	198	199
March, 1919	320	42.4	.361	15.30	205	161

**TABLE 9. Weaving — Timeworkers: Males — 7 Establishments**

Sept., 1914	364	52.0	.186	9.66	100	100
Sept., 1915	433	52.8	.191	10.09	103	104
Sept., 1916	417	54.7	.230	12.54	124	130
Sept., 1917	369	52.3	.286	15.00	154	155
Sept., 1918	344	53.1	.377	20.00	203	207
March, 1919	273	42.4	.389	16.48	209	171

**TABLE 10. Weaving — Pieceworkers: Males — 13 Establishments**

Sept., 1914	1,010	51.4	.198	10.17	100	100
Sept., 1915	1,234	52.1	.189	9.87	95	84
Sept., 1916	1,073	52.8	.240	12.70	121	125
Sept., 1917	1,068	50.8	.279	14.19	141	140
Sept., 1918	815	52.1	.417	21.72	211	214
March, 1919	955	39.7	.389	15.47	197	152

**TABLE 11. Loom-fixing — Timeworkers: Males — 10 Establishments**

Sept., 1914	251	52.7	.262	13.80	100	100
Sept., 1915	293	52.7	.262	13.80	100	100
Sept., 1916	288	52.9	.312	16.47	119	119
Sept., 1917	286	53.0	.372	19.75	142	143
Sept., 1918	266	52.2	.514	26.80	196	194
March, 1919	260	43.4	.505	21.90	193	159

**TABLE 12. Misc. Unskilled Labor — Timeworkers: Males — 12 Estab.**

Sept., 1914	501	55.8	.177	9.82	100	100
Sept., 1915	484	55.4	.175	9.24	99	94
Sept., 1916	488	55.0	.210	11.57	119	118
Sept., 1917	476	53.8	.250	13.46	141	137
Sept., 1918	473	56.9	.340	19.33	192	197
March, 1919	630	51.5	.351	18.08	198	184

**COTTON MANUFACTURING INDUSTRY—(continued): SUMMARIES  
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1914,—MARCH, 1919**

(National Industrial Conference Board)

**TABLE 13. Carding — Timeworkers: Females — 8 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	158	49.2	\$ .117	\$5.76	100	100
Sept., 1915	154	49.0	.110	5.37	94	93
Sept., 1916	119	52.7	.134	7.05	115	122
Sept., 1917	158	49.6	.156	7.74	134	134
Sept., 1918	155	44.9	.218	9.80	186	170
March, 1919	128	37.7	.237	8.96	203	156

**TABLE 14. Carding — Pieceworkers: Females — 7 Establishments**

Sept., 1914	455	50.5	.161	8.13	100	100
Sept., 1915	479	51.4	.154	7.92	96	97
Sept., 1916	473	49.8	.192	9.54	119	117
Sept., 1917	476	51.6	.229	11.82	142	145
Sept., 1918	469	51.5	.303	15.61	188	192
March, 1919	416	39.0	.310	12.08	193	149

**TABLE 15. Drawing — Timeworkers: Females — 8 Establishments**

Sept., 1914	130	51.6	.139	7.18	100	100
Sept., 1915	151	48.9	.137	6.70	99	93
Sept., 1916	174	51.1	.167	8.51	120	119
Sept., 1917	154	50.9	.196	9.98	141	139
Sept., 1918	143	50.1	.276	13.84	198	193
March, 1919	131	44.5	.269	11.94	193	166

**TABLE 16. Spinning — Timeworkers: Females — 8 Establishments**

Sept., 1914	250	50.6	.135	6.82	100	100
Sept., 1915	276	51.4	.127	6.55	95	96
Sept., 1916	267	53.3	.153	8.18	114	120
Sept., 1917	349	51.1	.188	9.58	139	141
Sept., 1918	337	48.8	.278	13.59	207	199
March, 1919	434	41.5	.289	11.97	214	176

**TABLE 17. Spinning — Pieceworkers: Females — 11 Establishments**

Sept., 1914	1,036	50.6	.141	7.15	100	100
Sept., 1915	963	53.2	.144	7.67	102	107
Sept., 1916	928	51.9	.185	9.58	131	134
Sept., 1917	905	50.8	.230	11.69	163	163
Sept., 1918	877	51.4	.306	15.71	217	220
March, 1919	878	41.0	.323	13.25	229	185

**TABLE 18. Spooling, Warping, Twisting — Timeworkers: Females — 9 Estab.**

Sept., 1914	155	50.2	.134	6.72	100	100
Sept., 1915	161	52.1	.128	6.64	96	99
Sept., 1916	177	48.8	.154	7.49	115	112
Sept., 1917	180	54.2	.170	9.18	127	137
Sept., 1918	171	57.4	.233	13.36	174	199
March, 1919	172	38.6	.268	10.36	200	154



COTTON MANUFACTURING INDUSTRY — (*continued*): SUMMARIES  
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(National Industrial Conference Board)

**TABLE 19. Spooling, Warping, Twisting—Pieceworkers: Females—12 Estab.**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	573	51.6	\$ .150	\$7.76	100	100
Sept., 1915	609	52.0	.154	7.99	103	103
Sept., 1916	599	49.6	.187	9.30	125	120
Sept., 1917	607	53.3	.213	11.35	134	146
Sept., 1918	601	50.2	.288	14.45	192	186
March, 1919	732	34.0	.302	10.25	201	132

**TABLE 20. Weaving — Timeworkers: Females — 5 Establishments**

Sept., 1914	210	53.2	.190	10.10	100	100
Sept., 1915	223	53.7	.191	10.25	101	102
Sept., 1916	216	53.6	.224	12.00	118	119
Sept., 1917	225	54.1	.258	13.97	136	138
Sept., 1918	243	52.4	.347	18.19	183	180
March, 1919	218	44.0	.342	15.05	180	149

**TABLE 21. Weaving — Pieceworkers: Females — 14 Establishments**

Sept., 1914	998	51.1	.155	7.89	100	100
Sept., 1915	1,181	51.7	.175	9.03	113	115
Sept., 1916	1,104	53.2	.178	9.50	115	120
Sept., 1917	1,085	51.4	.255	13.11	165	166
Sept., 1918	1,064	51.5	.364	18.75	235	238
March, 1919	958	41.8	.352	14.70	227	186

**TABLE 22. Misc. Unskilled Labor — Timeworkers: Females — 6 Estab.**

Sept., 1914	123	49.8	.130	6.49	100	100
Sept., 1915	118	50.3	.140	7.04	107	108
Sept., 1916	88	49.8	.170	8.45	130	130
Sept., 1917	145	48.5	.193	9.36	148	144
Sept., 1918	162	49.1	.254	12.49	195	193
March, 1919	265	46.6	.237	11.05	182	170

Chart 6, National Industrial Conference Board, Research Report No. 20

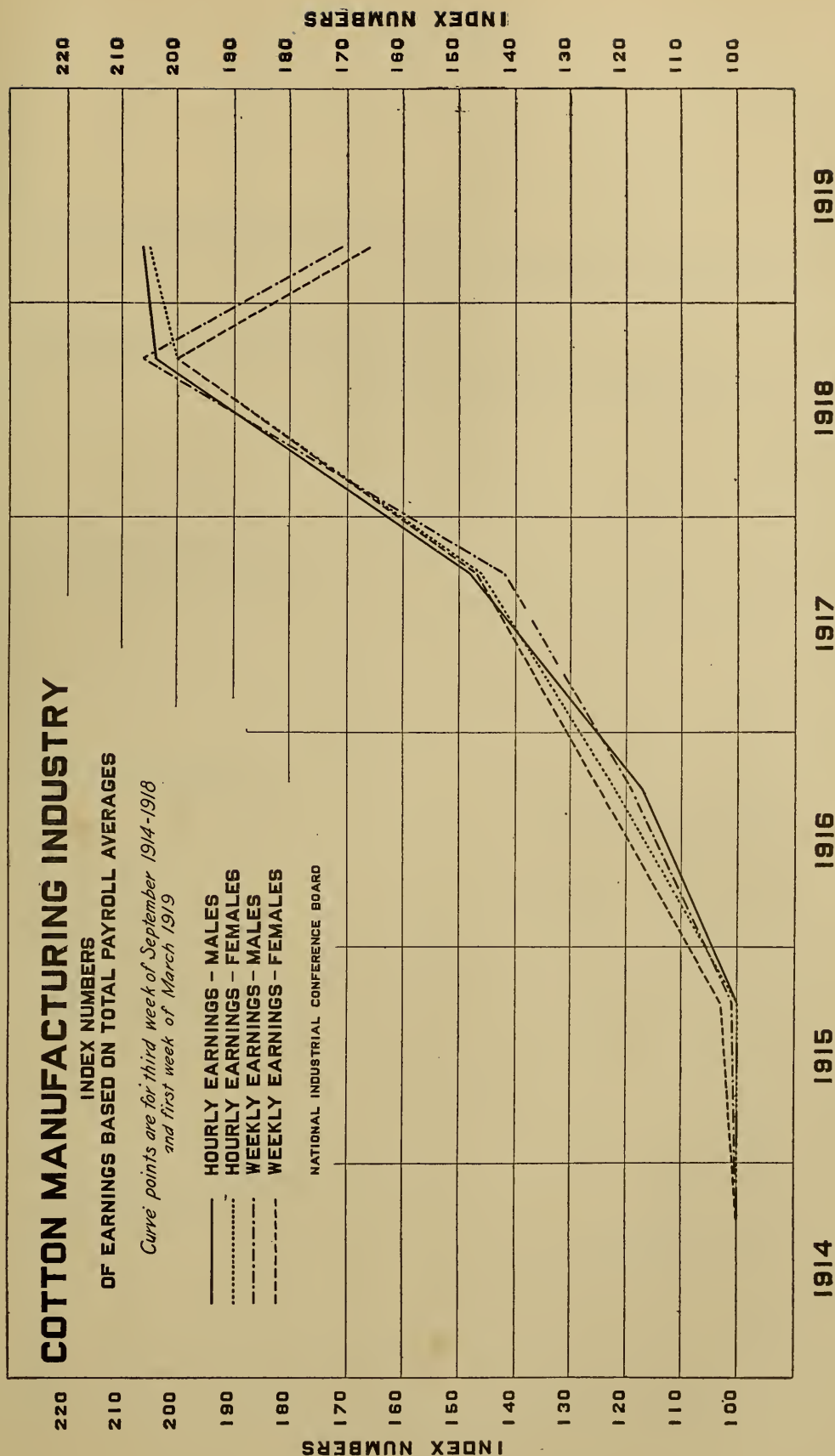
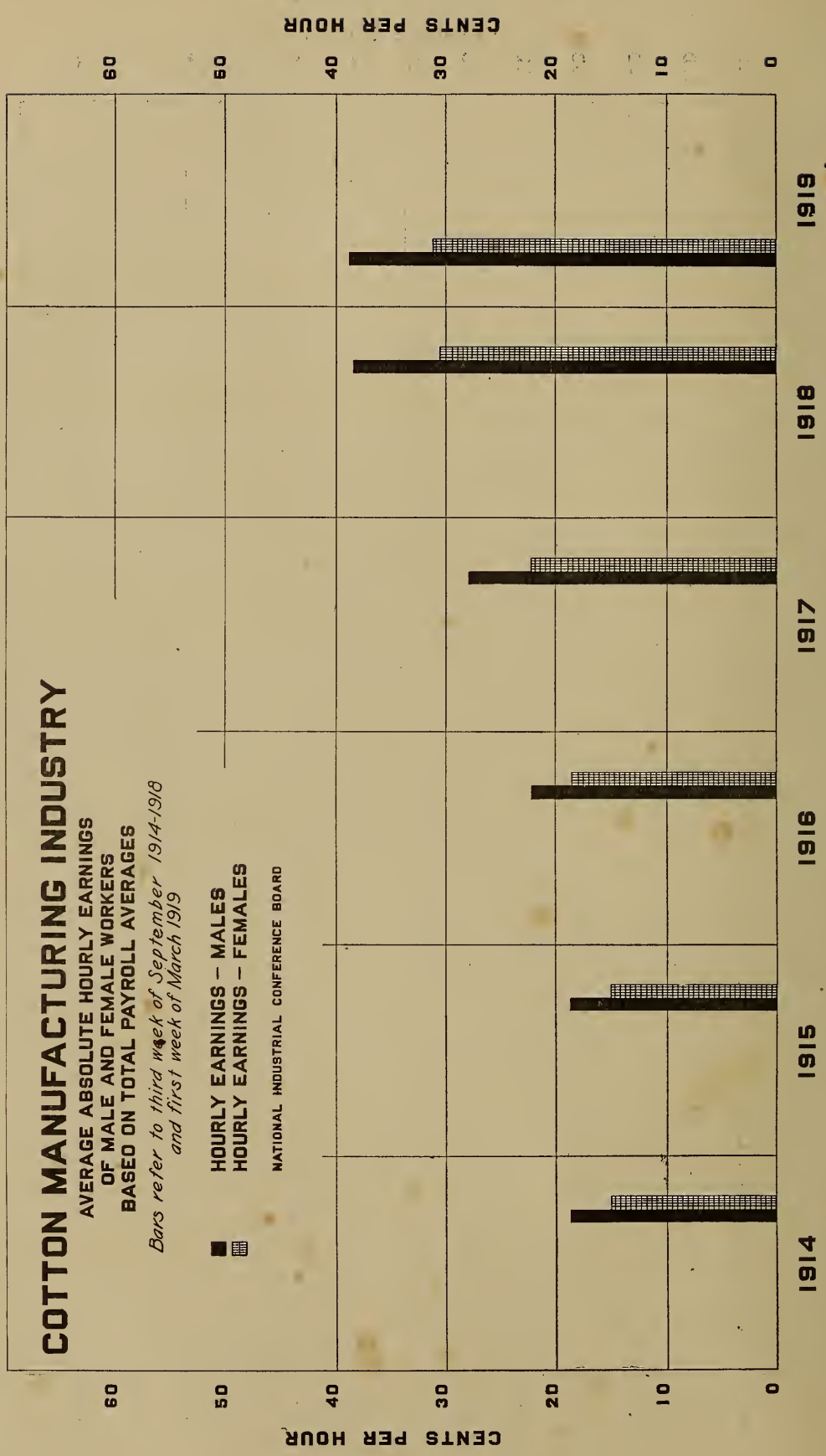
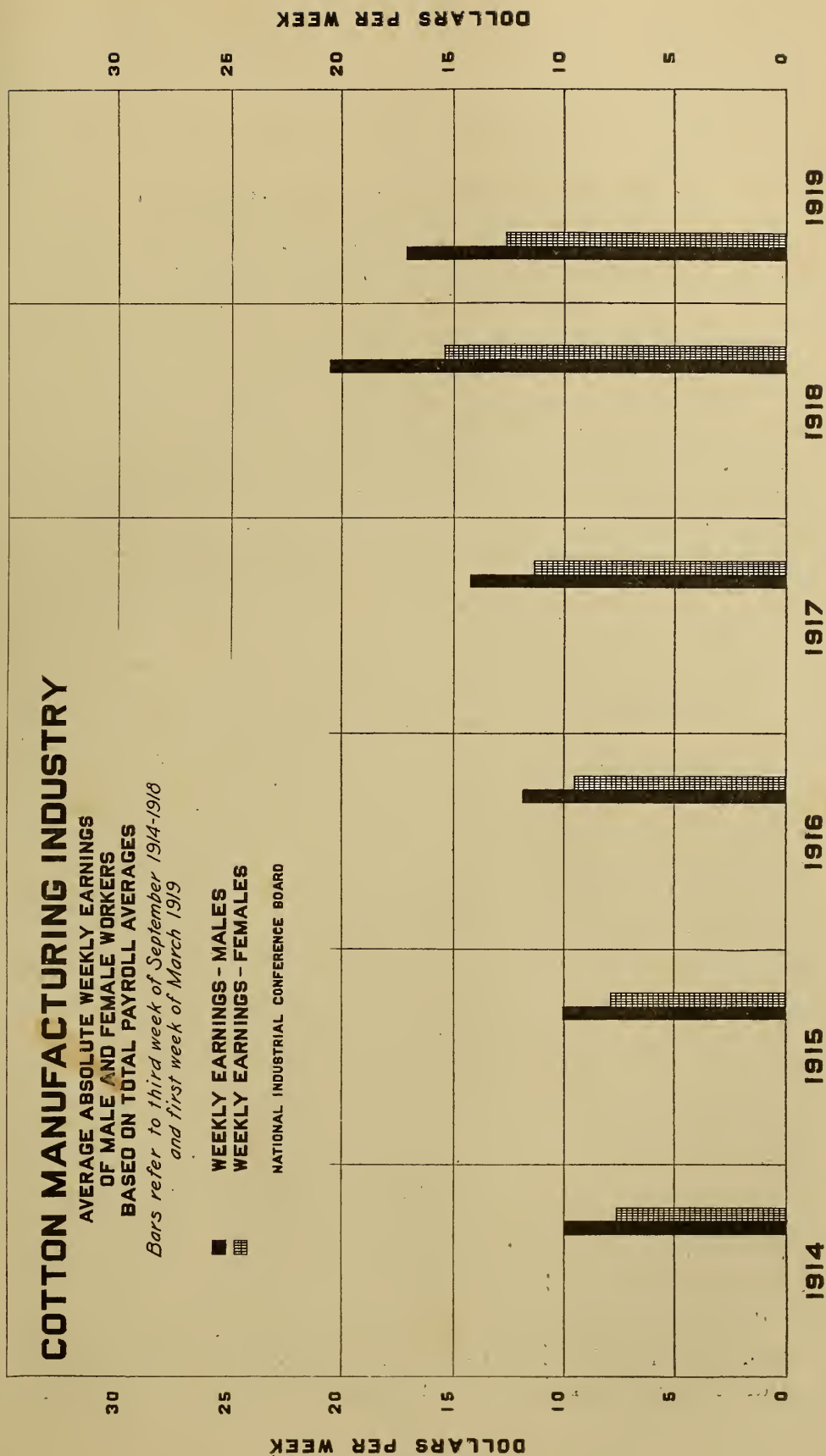




Chart 7, National Industrial Conference Board, Research Report No. 20





## IV

### WOOL MANUFACTURING INDUSTRY

Wage data for the wool manufacturing industry were obtained from 20 identical establishments located for the most part in the North Atlantic States. These employed 9,105 men and 6,943 women in September, 1914; in September, 1918, the numbers had increased to 9,406 and 7,576 respectively. Employment figures for March, 1919, showed substantial decreases in the number employed compared with those of September, 1918, —  $16\frac{1}{2}\%$  in the case of males and  $12\frac{1}{2}\%$  in the case of females. The detailed comparisons given in Tables 1 to 21 are constructed on the same basis as those already presented for the metal and cotton manufacturing industries.

#### HOURLY EARNINGS

##### SEPTEMBER, 1914, TO SEPTEMBER, 1918

Table 1 gives averages for male workers in 20 identical mills based on total payroll figures irrespective of occupation. Index numbers in column C show that average hourly earnings of all male workers reported upon increased 97% between September, 1914, and September, 1918. Average absolute hourly earnings were 21.5 cents and 42.4 cents, respectively, in the two periods.

Comparisons of average hourly earnings of male workers in various occupational groups show in most cases greater increases than those based on the total payroll averages. Thus, in the seven groups for which data are tabulated in Tables 4, 5, 6, 7, 8, 9, and 10, average hourly earnings increased in every case 100% or more, the largest increase of 124% occurring among spinners on timework (Table 5). For the remaining three groups (Tables 3, 11, and 12) the increases were, respectively, 98%, 82%, and 91%.

Table 2 is based on total payroll averages for female workers in 20 identical establishments. The index numbers of changes in average hourly earnings in column

C show the same relative increase for the period September, 1914, to September, 1918, as for male workers — 97%. Average absolute hourly earnings in the two periods, however, were 16.7 cents and 32.9 cents respectively, — nearly 25% lower than similar averages for male workers.

Increases in average hourly earnings of female workers in the specified occupational groups were in general smaller than those of male workers. For only four groups, carding (Table 13), spinners on both timework and piecework (Tables 14 and 15), and reelers, winders and spoolers on timework (Table 16) were the increases more than 100%, while in one group, finishers on timework (Table 20), the increase was only 56%. In the remaining groups the increases were 83% for reelers, winders and spoolers on piecework (Table 17); 96% for timeworkers on drawing (Table 18); 95% for weavers on piecework (Table 19); and 96% for finishers on piecework (Table 21). Average absolute hourly earnings in 1914 were lowest for female workers in reeling, winding and spooling on timework (Table 16), namely 12.9 cents, and highest for finishers on piecework (Table 21) — 21.5 cents. In the September, 1918, period the lowest average earnings for any group of women workers were those of finishers on timework (Table 20) — 27.4 cents, while for finishers on piecework (Table 21) the maximum average of 42.1 cents per hour was noted.

A comparison of index numbers of changes in average hourly earnings of male and female workers in the same groups indicates generally a greater percentage increase for male workers. Thus for male spinners on timework (Table 5) the increase was 124%, while for females (Table 14) it was 117%. Again for male spinners on piecework (Table 6) the increase was 113% against 104% for females (Table 15). For male weavers on piecework (Table 9) the increase was 110%, for females on the same work (Table 19) 95%; for finishers on timework (Tables 11 and 20) 82% and 56%, respectively.

The index numbers for certain occupational groups afford some evidence that the earnings of pieceworkers increased relatively more than those of dayworkers, but in view of the several instances in which the reverse was true, this cannot be said to have been a definite tendency. Thus, although male weavers on piecework



(Table 9) and female finishers on piecework (Table 21) showed greater increases than the corresponding groups on timework, the increases for spinners on timework, both male and female, were greater than those of pieceworkers (Tables 5 and 6, 14 and 15).

### HOURLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

The number of male workers in 20 establishments represented in the total payroll tabulations decreased 16% between September, 1918, and March, 1919. This reduction in the number employed was accompanied by a decrease in average hourly earnings from 42.4 cents to 40.5 cents, or 4.7%. A reduction in the number of workers and in hourly earnings was also characteristic of nearly all of the occupational groups, but was especially marked in the case of sorters (Table 3). The number in this group was reduced by 33 $\frac{1}{3}$ %, while hourly earnings decreased 6%. For the occupational groups as a whole the weighted percentage decrease in numbers was 14.26%. The number of workers in the occupations showing decreases represent 90 $\frac{1}{2}$ % of the total number employed in all of the specified groups and 62.4% of all males in the reporting establishments.

Employment figures based on data for all female workers, collectively, show a decrease of 12 $\frac{1}{2}$ % in numbers between September, 1918, and March, 1919. For six of the nine occupational groups specified in the tabulations the decreases were in every case greater than this figure. The weighted average for all groups was 18.73%. This average represents 66% of all women employed in the reporting establishments and 81.3% of the total number in the nine occupational groups specified. In three of the seven groups showing reductions in numbers hourly earnings decreased from 1 $\frac{1}{2}$ % to 4.7%, while in the remaining four increases ranged from 2% to 6.9%.

### WEEKLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

Average weekly earnings of all male workers in the reporting mills (Table 1) advanced during the war period from \$11.52 in 1914 to \$23.21 in 1918, an increase of 102%. The somewhat larger increase in weekly than in hourly earnings is due to the greater number of hours



worked in September, 1918, than in the corresponding period in 1914, the averages being 55 and 53.8 respectively.

In general the divergence between changes in hourly and weekly earnings is much smaller than that observed in the metal manufacturing industries. This may be attributed to the fact that very little overtime was worked in the wool industry, as compared with the metal trades. While overtime was indicated in a number of individual establishments in 1918, the effect upon the average hours worked was insignificant, and, in general, time worked in the periods from 1914 to 1918 remained fairly uniform. A notable exception to the general uniformity of percentage increases in hourly and weekly earnings is found in the case of wool sorters (Table 3). Here weekly earnings increased 148% against 98% for hourly earnings. In this case average hours in September, 1918, were 65 per week, a figure considerably above the average nominal hours for the period and indicating clearly the presence of overtime.

For female workers, data based on total payroll figures (Table 2) show that average weekly earnings increased 89% during the war period. The absolute average weekly earnings in the 1914 and 1918 periods were, respectively, \$8.70 and \$16.42. The increase in this case was somewhat smaller than that occurring in average hourly earnings due to the fact that average hours worked were 52 per week in the 1914 period and only 50 in 1918.

## WEEKLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

The decrease in weekly earnings was more marked during this period for both males and females than that in hourly earnings (Tables 1 and 2). For males the decrease was 20%, while for females it was 18%. Average hours per week decreased from 55 to 46 in the case of male workers and from 50 to 41 for females.

For most occupational groups the decreases in weekly earnings were not substantially different from those noted in Tables 1 and 2. For male wool sorters (Table 3) and females in the card room (Table 13), however, decreases of 42½% and 35½%, respectively, were noted. Average hours in these instances decreased from 65 to

39.8 and from 51.8 to 34 respectively, reflecting the unsettled conditions prevailing in the industry at the time.

### SUMMARY

To summarize briefly the wage changes occurring in the wool manufacturing industry during the period covered by the data submitted, it may be stated that hourly earnings for most of the groups increased 100% or more up to September, 1918. For the period September, 1918, and March, 1919, a slight decrease occurred in most of the occupations.

Changes in weekly earnings up to September, 1918, were in most cases in fair agreement with those in hourly earnings, thus indicating that average hours actually worked in the different payroll periods considered were comparatively uniform. For the period September, 1918, to March, 1919, however, there was a sharp reduction in weekly earnings due chiefly to a reduction in average hours worked.

### CHARTS

Chart 9 is constructed from index numbers of hourly and weekly earnings of male and female workers presented in Tables 1 and 2. Unlike the similar chart for the metal manufacturing industries, all curves lie near together up to September, 1918, indicating that earnings of men and women increased at substantially the same rate during the period, and also that average hours worked did not vary greatly from year to year. This does not necessarily mean, however, that average hours of males and females were the same. On the contrary, the average hours worked by women throughout the entire period were consistently lower than those of men. (See Table 2.) The sharp drop in the curves of weekly earnings between September, 1918, and March, 1919, is the direct result of a corresponding decline in the average hours worked during the latter period. The curves for hourly earnings indicate only a slight decrease in each case as compared with the 1918 figures.

Charts 10 and 11 show comparisons, respectively, of average absolute hourly and weekly earnings of men and women for the chosen period in each year.

WOOL MANUFACTURING INDUSTRY: SUMMARIES OF PAYROLL  
AVERAGES FOR ALL MALE AND FEMALE WORKERS AND FOR  
SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER, 1914, —  
MARCH, 1919

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 20 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	9,105	53.8	\$ .215	\$11.52	100	100
Sept., 1915	8,957	51.5	.214	11.05	100	96
Sept., 1916	9,875	54	.251	13.51	117	117
Sept., 1917	9,558	55	.308	16.97	143	147
Sept., 1918	9,406	55	.424	23.21	197	202
March, 1919	7,868	46	.405	18.61	188	162

**TABLE 2. Total Payroll Data: Females — 20 Establishments**

Sept., 1914	6,943	52	.167	8.70	100	100
Sept., 1915	6,648	48.8	.162	7.89	97	91
Sept., 1916	7,243	51.8	.199	10.30	119	118
Sept., 1917	7,279	50.5	.250	12.69	150	146
Sept., 1918	7,576	50	.329	16.42	197	189
March, 1919	6,635	41	.328	13.46	196	155

**TABLE 3. Sorting — Pieceworkers: Males — 6 Establishments**

Sept., 1914	211	52	.296	15.37	100	100
Sept., 1915	228	59	.295	17.40	100	113
Sept., 1916	250	58	.339	19.71	115	128
Sept., 1917	243	66	.424	28.05	143	183
Sept., 1918	252	65	.586	38.10	198	248
March, 1919	168	39.8	.552	21.90	187	143

**TABLE 4. Carding — Timeworkers: Males — 17 Establishments**

Sept., 1914	641	54.5	.177	9.64	100	100
Sept., 1915	689	52.3	.180	9.39	102	97
Sept., 1916	658	56	.213	11.95	120	124
Sept., 1917	630	55.3	.272	15.05	154	156
Sept., 1918	677	55	.376	20.60	212	214
March, 1919	548	45.5	.384	17.45	217	181

**TABLE 5. Spinning — Timeworkers: Males — 16 Establishments**

Sept., 1914	413	53.8	.182	9.75	100	100
Sept., 1915	424	51.5	.182	9.38	100	96
Sept., 1916	459	52.2	.222	11.62	122	119
Sept., 1917	363	52.2	.293	15.30	161	157
Sept., 1918	372	51.5	.407	20.99	224	215
March, 1919	296	44.5	.394	17.58	217	180

**Table 6. Spinning — Pieceworkers: Males — 13 Establishments**

Sept., 1914	954	52.8	.162	8.56	100	100
Sept., 1915	925	45.5	.166	7.54	103	88
Sept., 1916	908	53.3	.194	10.29	120	120
Sept., 1917	960	52	.243	12.64	150	148
Sept., 1918	1,043	49	.345	16.91	213	198
March, 1919	811	37.5	.329	12.30	203	144



WOOL MANUFACTURING INDUSTRY — (continued): SUMMARIES  
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**TABLE 7. Reeling, Winding, Spooling—Timeworkers: Males—6 Estab.**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	95	53.8	\$ .201	\$10.68	100	100
Sept., 1915	87	54.8	.203	11.09	101	104
Sept., 1916	55	56.5	.237	13.35	118	125
Sept., 1917	47	53.8	.329	17.95	164	168
Sept., 1918	61	48.5	.418	20.35	208	191
March, 1919	80	48.3	.417	20.80	207	195

**TABLE 8. Weaving — Timeworkers: Males — 16 Establishments**

Sept., 1914	646	52.5	.252	13.24	100	100
Sept., 1915	548	49.8	.249	12.39	99	94
Sept., 1916	641	52	.294	15.26	117	115
Sept., 1917	621	50.8	.355	18.06	141	136
Sept., 1918	565	49	.521	25.50	207	193
March, 1919	624	43.5	.471	20.48	187	155

**TABLE 9. Weaving — Pieceworkers: Males — 17 Establishments**

Sept., 1914	1,534	51.2	.225	11.55	100	100
Sept., 1915	1,534	47	.227	10.70	101	93
Sept., 1916	1,518	51.5	.271	13.92	120	121
Sept., 1917	1,552	53	.319	16.90	142	146
Sept., 1918	1,404	52.5	.472	24.76	210	214
March, 1919	1,175	43	.457	19.59	203	170

**TABLE 10. Dyeing — Timeworkers: Males — 14 Establishments**

Sept., 1914	922	54.3	.175	9.49	100	100
Sept., 1915	985	52.8	.169	8.97	97	95
Sept., 1916	1,004	52.3	.206	11.20	118	118
Sept., 1917	847	55.3	.255	14.10	146	149
Sept., 1918	846	53.8	.351	18.93	201	200
March, 1919	713	47.8	.356	17.00	203	179

**TABLE 11. Finishing — Timeworkers: Males — 18 Establishments**

Sept., 1914	920	51.8	.215	11.10	100	100
Sept., 1915	889	43.8	.203	8.93	94	81
Sept., 1916	965	54	.231	12.50	107	113
Sept., 1917	872	54.3	.281	15.21	131	137
Sept., 1918	868	51.5	.391	20.10	182	181
March, 1919	757	43	.385	16.55	179	149

**TABLE 12. Misc. Unskilled Labor — Timeworkers: Males — 10 Estab.**

Sept., 1914	332	57.5	.201	11.60	100	100
Sept., 1915	332	57.3	.216	12.42	108	107
Sept., 1916	363	53	.246	13.04	122	112
Sept., 1917	422	55.5	.264	14.65	131	126
Sept., 1918	409	58	.384	22.20	191	191
March, 1919	382	52	.406	21.20	202	183

WOOL MANUFACTURING INDUSTRY — (*continued*): SUMMARIES  
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**TABLE 13. Carding — Timeworkers: Females — 6 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	144	53.5	\$ .137	\$7.35	100	100
Sept., 1915	113	52.8	.120	6.32	88	86
Sept., 1916	181	53.8	.170	9.18	124	125
Sept., 1917	175	55	.223	11.79	163	160
Sept., 1918	215	51.8	.296	15.35	216	209
March, 1919	142	34	.291	9.91	212	135

**TABLE 14. Spinning — Timeworkers : Females — 11 Establishments**

Sept., 1914	1,088	52	.136	7.12	100	100
Sept., 1915	1,025	45.8	.136	6.26	100	88
Sept., 1916	971	53.3	.166	8.82	122	124
Sept., 1917	986	51.8	.215	11.22	158	158
Sept., 1918	1,152	49.3	.295	14.59	217	205
March, 1919	1,003	39.8	.281	10.79	207	152

**TABLE 15. Spinning — Pieceworkers: Females — 4 Establishments**

Sept., 1914	324	50	.157	7.87	100	100
Sept., 1915	353	49.3	.166	8.15	106	104
Sept., 1916	292	50.5	.198	10.00	126	127
Sept., 1917	255	51.5	.243	12.48	155	159
Sept., 1918	300	51.3	.320	16.35	204	208
March, 1919	234	40.8	.315	12.85	201	163

**TABLE 16. Reeling, Winding, Spooling—Timeworkers: Females—7 Estab.**

Sept., 1914	227	52.5	.129	6.79	100	100
Sept., 1915	269	52	.131	6.82	102	100
Sept., 1916	200	51.5	.155	8.00	120	118
Sept., 1917	164	46.5	.196	9.15	152	135
Sept., 1918	167	49.8	.277	13.78	215	203
March, 1919	213	49.8	.283	14.10	219	208

**TABLE 17. Reeling, Winding, Spooling—Pieceworkers: Females—6 Estab.**

Sept., 1914	145	51.8	.172	8.95	100	100
Sept., 1915	125	48.8	.169	8.25	98	92
Sept., 1916	142	48.8	.202	9.95	117	111
Sept., 1917	92	50	.239	11.95	139	134
Sept., 1918	91	50.3	.314	15.72	183	176
March, 1919	109	45	.331	14.82	192	166

**TABLE 18. Drawing — Timeworkers: Females — 5 Establishments**

Sept., 1914	423	53	.146	7.77	100	100
Sept., 1915	421	49.5	.144	7.15	99	92
Sept., 1916	416	53.5	.177	9.49	121	122
Sept., 1917	350	51.5	.218	11.21	149	144
Sept., 1918	466	52.5	.286	15.00	196	193
March, 1919	369	36.5	.296	10.80	203	139



WOOL MANUFACTURING INDUSTRY — (*continued*): SUMMARIES  
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**TABLE 19. Weaving — Pieceworkers: Females — 15 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	1,816	52.3	\$ .201	\$10.47	100	100
Sept., 1915	1,554	48	.195	9.36	97	89
Sept., 1916	1,831	53.3	.242	12.87	120	123
Sept., 1917	1,967	50.8	.303	15.39	151	147
Sept., 1918	2,022	50.8	.392	19.88	195	190
March, 1919	1,485	40	.418	16.71	208	160

**TABLE 20. Finishing — Timeworkers: Females — 14 Establishments**

Sept., 1914	757	49.8	.176	8.78	100	100
Sept., 1915	824	50.5	.152	7.72	86	88
Sept., 1916	1,067	51.3	.180	9.24	102	105
Sept., 1917	670	51.5	.212	10.86	121	124
Sept., 1918	731	49.5	.274	13.45	156	153
March, 1919	683	39.8	.280	11.11	159	127

**TABLE 21. Finishing — Pieceworkers: Females — 7 Establishments**

Sept., 1914	235	49.5	.215	10.62	100	100
Sept., 1915	182	49.3	.217	10.68	101	101
Sept., 1916	191	46.8	.247	11.58	115	109
Sept., 1917	160	52.8	.315	16.56	147	156
Sept., 1918	123	49.5	.421	20.75	196	195
March, 1919	140	47.3	.442	20.85	206	196

**SUPPLEMENTAL DATA**

In addition to the data tabulated above, figures were also received from 7 Massachusetts mills covering a somewhat different period but, in general, compiled in such a manner as not to permit of ready inclusion with the others. These figures represent *full-time* earnings and were based upon averages of payrolls for the month of June in each of the years 1914 to 1918 inclusive. The average number employed in these mills was 1,097 males and 1,813 females in June, 1914, and 1,150 and 1,651, respectively, in June, 1918.

Tables 22 to 31, inclusive, contain averages of earnings and corresponding index numbers for male and female workers in these seven establishments except in the case of weavers, for whom only combined figures for males and females were obtainable. The data did not permit of the separation of earnings of timeworkers and pieceworkers.

Figures in Tables 22 and 23 are based on total payroll averages of all occupations combined. The index numbers show increases of 123% in hourly and 114% in weekly earnings of male workers, while for female workers the increases were 122% and 115%, respectively.

These increases, as well as the absolute average earnings in June, 1918, are considerably higher than those for the larger number of mills included in Tables 1 and 2 for September, 1918. Thus, taking averages for the total payroll data, the absolute hourly earnings of males in June, 1918, in the 7 mills were 49.9 cents as compared with 42.4 cents for the 20 establishments given in Table 1. Similarly, the average hourly earnings of females in the 7 mills were 35 cents, against 32.9 cents in the 20 establishments included in Table 2. In the case of some specific occupations, even greater divergence is at times shown between the two groups. Similar differences appear in the comparisons of weekly earnings.

With respect to weekly earnings, one principal explanation of the differences is to be found in the fact that the figures for the 7 mills represent computed *full-time* earnings and therefore make no allowance for absence and labor turnover, on the one hand, or overtime on the other. A further explanation is to be found in the fact that in this group of 7 mills much of the work was on government contracts and of an unusually uniform character, which greatly facilitated efficiency of production. It should be noted that in 1914 the absolute hourly and weekly earnings in this group of 7 establishments did not differ strikingly from those for the 20 establishments given in Tables 1 and 2.

To a considerable extent these influences also explain the differences in hourly earnings, but it seems probable that a major factor in this case was the uniform character of much of the work in this group of 7 establishments.

Bearing in mind these considerations and the important factor that the figures for the 7 mills *were computed full-time earnings*, the differences are not surprising.

The average cumulative total of the general percentage increases announced in these mills between June, 1914, and July, 1918, was  $82\frac{3}{4}\%$ . The lowest increase reported for any mill was  $72\frac{1}{2}\%$ , the highest 113%. It will be noted that this general increase was less than that shown by the index numbers of Tables 22 and 23 and indicates that other advances in the wages of individuals or of certain groups had been made from time to time.

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IN A GROUP OF SEVEN ESTABLISHMENTS

Figures in columns C and D in these tables represent computed full-time earnings

(National Industrial Conference Board)

TABLE 22. Total Payroll Data\*: Males — 7 Establishments

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	A	B	C	D	E	F
June, 1914	1,097	55.5	\$.224	\$12.40	100	100
June, 1915	812	52	.245	12.70	109	102
June, 1916	1,125	51.5	.302	15.50	135	125
June, 1917	1,057	52.5	.376	19.80	168	160
June, 1918	1,150	53	.499	26.50	223	214

TABLE 23. Total Payroll Data\*: Females — 7 Establishments

June, 1914	1,813	55	.158	8.70	100	100
June, 1915	1,031	49.5	.165	8.17	104	94
June, 1916	1,997	52	.210	10.86	133	125
June, 1917	1,639	52	.254	13.28	161	153
June, 1918	1,651	53.5	.350	18.70	222	215

TABLE 24. Carding: Males — 7 Establishments

June, 1914	143	58	.152	8.85	100	100
June, 1915	139	52	.165	8.63	109	98
June, 1916	173	54	.196	10.62	129	120
June, 1917	182	56	.246	13.70	162	155
June, 1918	196	58	.331	20.47	218	231

TABLE 25. Spinning: Males — 7 Establishments

June, 1914	387	62	.188	11.60	100	100
June, 1915	277	56	.250	13.93	133	120
June, 1916	409	51	.296	15.80	158	136
June, 1917	313	53	.410	21.65	218	187
June, 1918	412	52	.575	30.00	306	259

TABLE 26. Weaving: Males and Females Combined—7 Establishments

June, 1914	2,347	43.5	.242	10.50	100	100
June, 1915	1,178	53	.236	12.55	98	120
June, 1916	1,927	54	.335	18.00	139	171
June, 1917	2,260	54	.425	22.90	176	218
June, 1918	2,386	54	.534	28.68	221	273

TABLE 27. Loom-fixing: Males — 7 Establishments

June, 1914	153	53.5	.317	17.00	100	100
June, 1915	98	53.5	.304	16.30	96	96
June, 1916	154	53.5	.469	25.10	148	148
June, 1917	162	53.5	.496	26.60	157	157
June, 1918	181	54.5	.541	29.40	171	173

\* Excludes General Labor



WOOL MANUFACTURING INDUSTRY — (*continued*): SUMMARIES  
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AND FOR SPECIFIED OCCUPATIONAL GROUPS, JUNE, 1914,  
— JUNE, 1918, IN A GROUP OF SEVEN ESTABLISHMENTS

Figures in columns C and D in these tables represent computed *full-time* earnings

(National Industrial Conference Board)

**TABLE 28. Carding: Females — 2 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
June, 1914	42	53.5	\$ .131	\$7.04	100	100
June, 1915	40	53.5	.129	6.91	99	98
June, 1916	46	53.5	.165	8.76	126	124
June, 1917	56	53.5	.206	11.05	157	157
June, 1918	52	53.5	.289	14.83	221	211

**TABLE 29. Spinning: Females — 3 Establishments**

June, 1914	387	54	.132	7.15	100	100
June, 1915	109	42.5	.142	6.05	108	85
June, 1916	355	47	.204	9.68	156	135
June, 1917	322	50	.216	10.72	164	150
June, 1918	413	53	.359	19.10	272	267

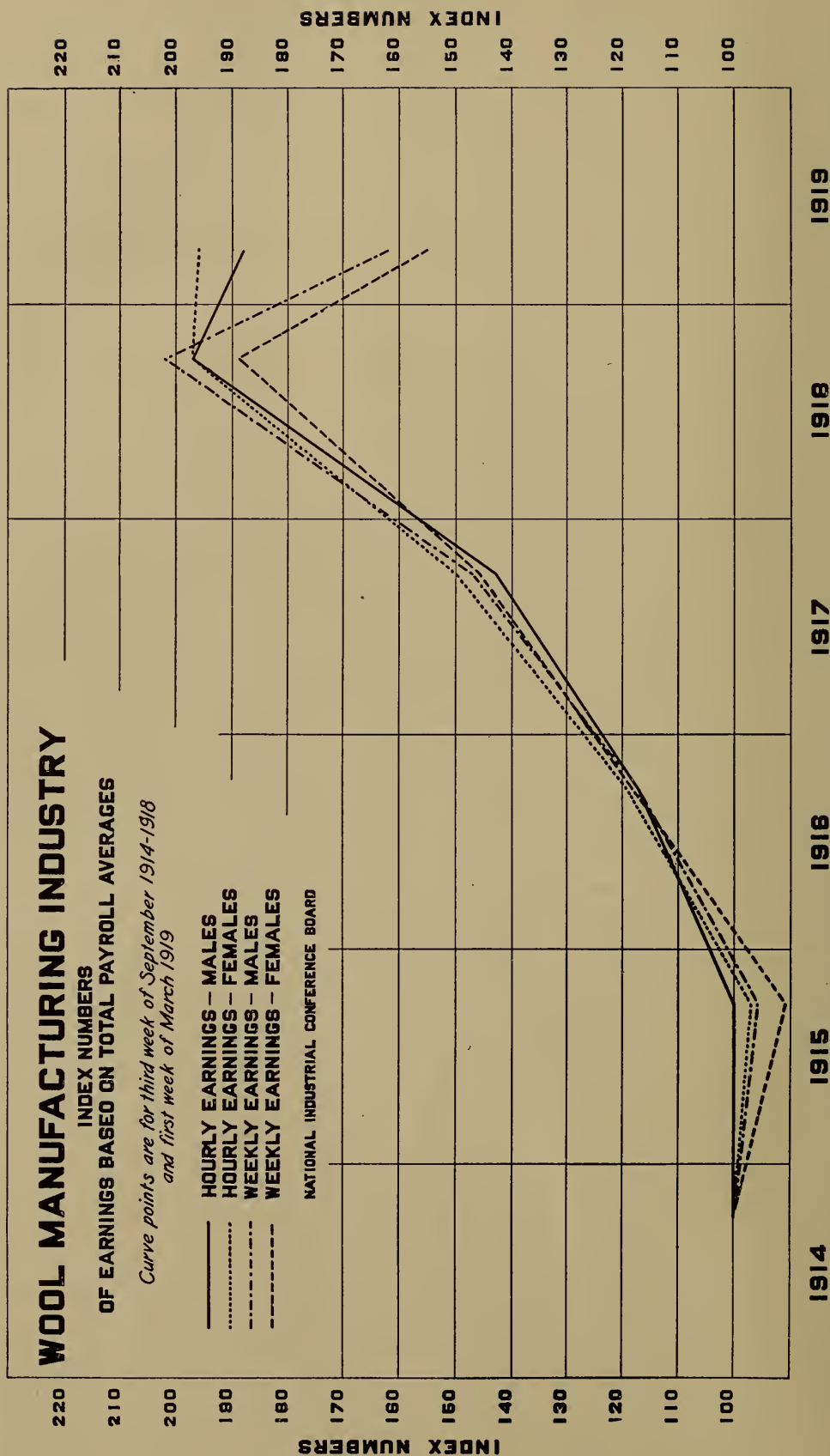
**TABLE 30. Burlers: Females — 7 Establishments**

June, 1914	382	53.5	.156	8.32	100	100
June, 1915	229	53	.158	8.30	101	100
June, 1916	385	53.5	.215	11.50	138	138
June, 1917	369	53	.282	14.90	181	179
June, 1918	297	54	.358	19.30	230	232

**TABLE 31. Menders: Females — 6 Establishments**

June, 1914	637	52.5	.188	9.91	100	100
June, 1915	344	52.5	.191	10.00	102	101
June, 1916	668	53.8	.240	12.90	128	130
June, 1917	470	53	.306	16.23	163	164
June, 1918	490	54	.398	21.40	212	216

Chart 9, National Industrial Conference Board, Research Report No. 20





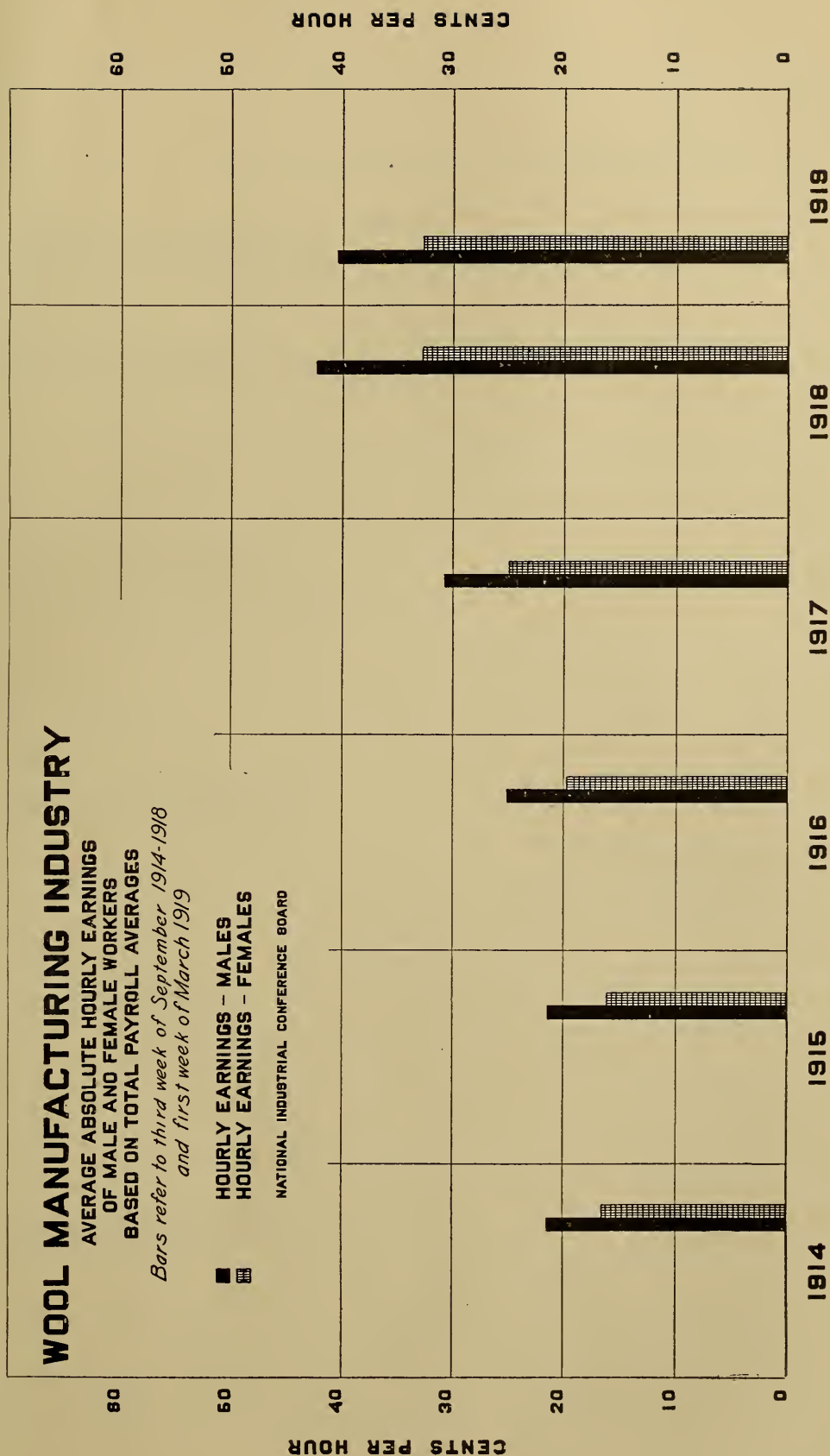
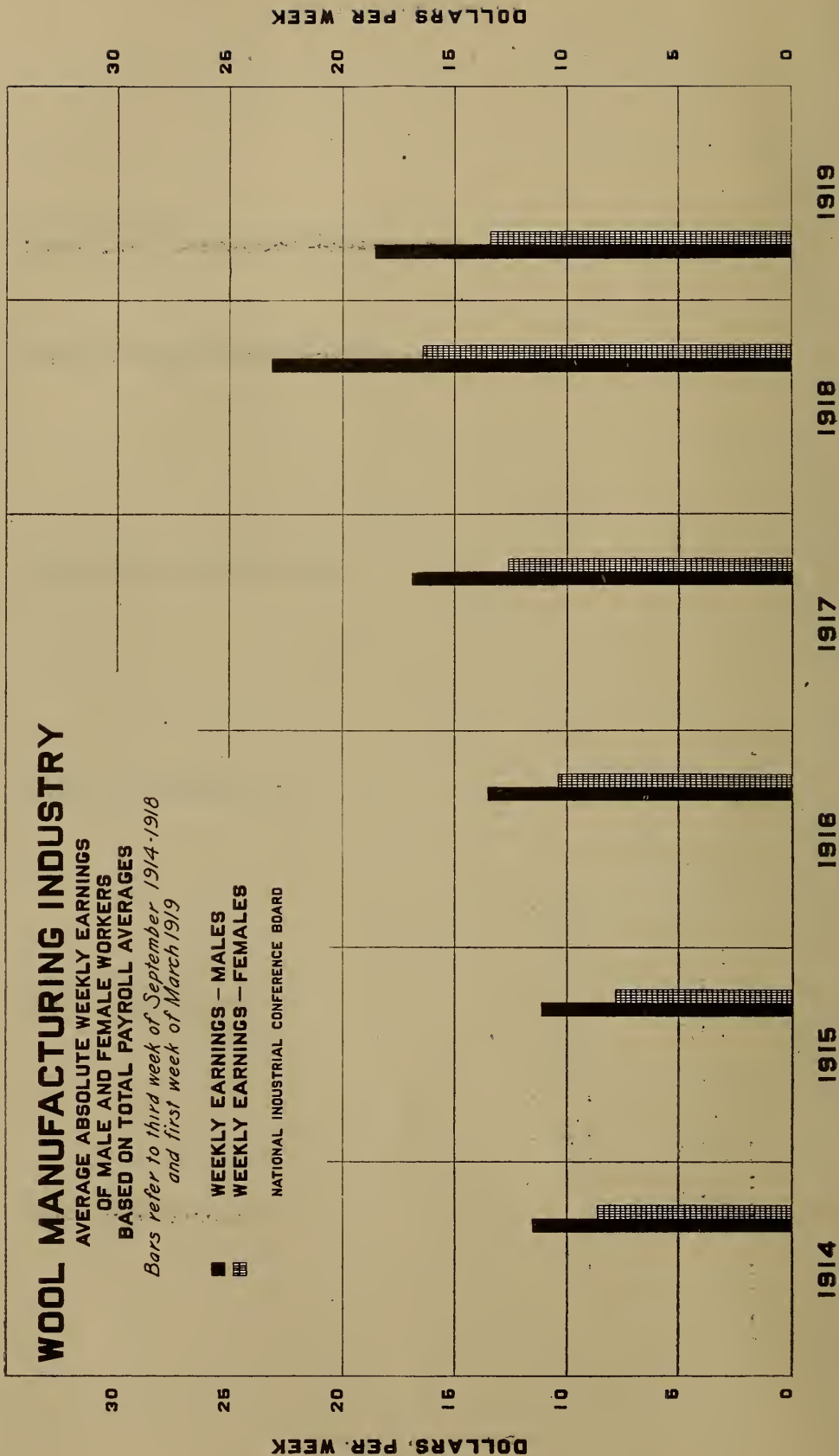


Chart 11, National Industrial Conference Board, Research Report No. 20



## V

### SILK MANUFACTURING INDUSTRY

Wage data applying to the silk industry were obtained from 29 identical establishments, located chiefly in the States of New Jersey and Pennsylvania, employing 4,897 males in 1914, 4,151 in 1918, and 4,539 in 1919; 6,312 females in 1914, 6,095 in 1918, and 6,178 in 1919. For the period September, 1914, to September, 1918, these figures indicate a falling off of 15% in employment of men and of 3½% in employment of women. The number employed in March, 1919, was slightly larger than in the preceding September, but still somewhat smaller than in September, 1914.

#### HOURLY EARNINGS

##### SEPTEMBER, 1914, TO SEPTEMBER, 1918

Table 1 presents averages for all male workers in the 29 identical establishments. As noted in column C of this table, average hourly earnings advanced from 23.0 cents in 1914 to 43.1 cents in 1918, an increase for the period of 88%. In the several occupational groups hourly earnings of males show wide differences in percentage changes. For weavers on piecework (Table 4) hourly earnings advanced from 21.6 cents in 1914 to 44.1 cents in 1918, an increase of 104%, and for miscellaneous unskilled labor (Table 6) they advanced from 25.1 cents in 1914 to 47.2 cents in 1918, an increase of 88%. In contrast to these groups the hourly averages for weavers on timework (Table 5) rose from 30.2 cents in 1914 to 43.3 cents in 1918, an increase of only 43%; for warpers (Table 3) the increase was 66%. It will be noted, however, that the actual earnings of weavers on timework in 1914 were comparatively high.

Table 2 gives averages for all female workers in the 29 identical establishments. Average hourly earnings, as noted in column C of this table, advanced from 15.6 cents in 1914 to 28.5 cents in 1918, an increase of 83%. The greatest increase was shown by weavers on piecework (Table 11), for whom the average increased from 15.4 cents in 1914 to 32.2 cents in 1918, an advance of 109%.

There was a noteworthy similarity in percentage changes for warpers (Table 10), quillers (Table 9), and winders on piecework (Table 8), these being 80%, 79%, and 78% respectively; the absolute earnings in these groups differed considerably. In contrast to the increases in these four groups was the comparatively low increase of 49% for winders on timework (Table 7).

Total payroll averages indicate that, as a whole, hourly earnings of male and female workers advanced during the war period in about the same proportion (Tables 1 and 2 and Chart 12), the increase for men being 88% and for women 83%. There was, however, considerable difference in actual money earned, males earning 23 cents per hour in 1914 and females 15.6 cents. For only one class of workers, weavers on piecework (Tables 4 and 11), was there an opportunity to compare the percentage increase in earnings of males and females in similar occupations. In this occupation hourly averages of males increased from 21.6 cents to 44.1 cents during the war period, an advance of 104%, as compared with 109% for female workers, for whom absolute earnings advanced from 15.4 cents to 32.2 cents.

Opportunity for comparison of percentage increases in hourly earnings of timeworkers and pieceworkers in similar occupations is limited to two groups, namely, male weavers (Tables 4 and 5) and female winders (Tables 7 and 8). In both cases pieceworkers show very much higher percentage increases. Thus hourly earnings of female winders on piecework increased during the war period by 78% as compared with 49% for those on timework. Hourly earnings of male weavers on piecework increased 104% as compared with 43% for timeworkers. It will be noted, however, that in 1914 the absolute amount earned per hour by timeworkers was higher in both groups than that earned by pieceworkers. Thus hourly earnings of female winders on timework in 1914 were 15.4 cents as compared with 12.9 cents for pieceworkers, and for male weavers on timework they were 30.2 cents as compared with 21.6 cents for those on piecework.

#### HOURLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

Between September, 1918, and March, 1919, average hourly earnings of male workers rose from 43.1 cents to



45.3 cents (Table 1), an increase of 5%. This increase was accompanied by an increase of 10% in the number of male workers.

The increase in number of male workers did not, however, extend to all occupational groups. In two, warpers and miscellaneous unskilled labor (Tables 3 and 6) respectively, fewer employees were reported in March, 1919, than in the preceding September. For these two groups, as well as for weavers on piecework (Table 4), average hourly earnings in March, 1919, were higher than in September, 1918. The increases were small, however, that of warpers from 37.5 cents to 40.6 cents, an advance of 8%, being the largest. In one group, weavers on timework, a 3% decrease from 43.3 cents to 41.9 cents is indicated (Table 5).

For the entire 4½-year period under investigation the hourly earnings for all male workers advanced 97%.

In the case of female workers only a slight increase in the number employed took place between September, 1918, and March, 1919, in the 29 reporting establishments (Table 2). Their average hourly earnings increased in this period from 28.5 cents to 31.2 cents, an advance of 9%, bringing the increase for the entire 4½-year period up to 100%.

For female workers all of the occupational groups indicated increases in average hourly earnings in the period September, 1918, to March, 1919. Averages for winders on piecework (Table 8) increased during the six months from 22.9 cents to 26.8 cents, an advance of 17%, bringing the total increase for the 4½-year period for this group up to 108%. Hourly earnings of weavers on piecework (Table 11) averaged 35.3 cents in March, 1919, an increase of 9½% over those of September, 1918, and of 129% for the entire period covered by the investigations.

## WEEKLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

Owing to the fact that the average hours worked per week in 1914 and 1918 by male workers differed only slightly, no marked divergence in percentage changes in hourly and weekly earnings was noted. In the total payroll data, weekly earnings of males increased from

\$11.77 to \$21.54 during the war period, an advance of 83%, as compared with 88% in hourly earnings. This slight difference is explained by a decrease in average hours from 51.2 in 1914 to 50 in 1918. The movement of weekly earnings in the specified occupational groups, however, showed greater variations. The percentage increase in weekly earnings of weavers on timework (Table 5), for example, was 51% against 43% in hourly earnings. Again in the case of warpers (Table 3) the increases in weekly and hourly earnings were, respectively, 55% and 66%. In this case average hours worked per week were less in 1918 than in 1914. In all cases the divergences noted were practically proportional to the differences in average hours worked in the 1918 and 1914 periods.

In the payroll averages of female workers (Table 2) weekly earnings advanced during the war period from \$7.49 to \$14.06, an increase of 88%. This coincides closely with the change in hourly earnings, since there was only a slight difference in average hours worked per week in the two periods. Among the occupational groups, however, there were several instances of marked difference in the averages for hours worked per week, with consequent wide divergences in percentage changes in average weekly and average hourly earnings. Notable examples of such divergences are found in the case of winders on piecework (Table 8), in which weekly earnings increased 103% as compared with 78% in hourly earnings, and of warpers on piecework (Table 10), in which the increases in weekly and hourly earnings were 104% and 80% respectively.

## WEEKLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

In data applying to the total payrolls as well as to the occupational groups for both male and female workers, weekly earnings are shown to be larger in March, 1919, than in the preceding September. In most groups this advance in weekly earnings was due to increased hourly earnings.

Total payroll averages for male workers show an increase in weekly earnings from \$21.54 in September, 1918, to \$22.69 in March, 1919, as a result of higher hourly

averages, the average hours worked in the two periods being the same.

Owing to an increase in hourly earnings the weekly earnings of male weavers on piecework (Table 4) and male warpers (Table 3) for the six months period advanced from \$21.84 to \$22.30 for the former and from \$18.78 to \$20.16 for the latter, in spite of a reduction in average hours worked. The experience of weavers on timework (Table 5) was practically the reverse. For this group average weekly earnings were slightly lower in March, 1919, than in September, 1918. Hourly earnings for the group showed a proportionately greater reduction for the period, but the effect on weekly earnings was largely offset by an increase in the average hours worked per week.

Weekly earnings of female workers, as shown by total payroll averages (Table 2), advanced from \$14.06 in 1918 to \$15.10 in 1919, an increase of 7%. This was due to an increase in average hourly earnings, and brings the total increase for the entire 4½-year period up to 102%. In general, weekly earnings of females in the various occupational groups were larger in March than in September. Thus earnings of weavers on piecework (Table 11) increased from \$15.90 to \$17.56, or by 10%, making the increase for the entire period under investigation 140%. Weekly earnings of winders on timework (Table 7) advanced from \$10.45 to \$11.68, indicating an increase of 12% for the last six months and of 48% for the whole period. Weekly earnings of winders on piecework (Table 8) and of quillers (Table 9) increased slightly in the last six months of the period.

Although hourly earnings of warpers on piecework (Table 10) increased 12% between September, 1918, and March, 1919, weekly earnings failed to advance for this period, owing to a decrease in hours worked from 53.9 to 46.9.

#### SUMMARY

The wage changes occurring in the silk manufacturing industry during the 4½-year period covered by the investigation may be briefly summarized as follows:

Hourly earnings of all male workers, collectively, increased 88% to September, 1918, and 97% to March, 1919, based on September, 1914, averages. For female workers these increases were 83% and 100%, respectively.

Weekly earnings of all male workers advanced 83% to September, 1918, and 93% to March, 1919, from the 1914 level. For female workers these percentages were 88% to September, 1918, and 102% to March, 1919.

Percentage increases in the specified occupations ranged from 39% to 129% in hourly earnings, and from 49% to 140% in weekly earnings. It is significant, however, that with respect to numbers represented in the different groups, averages for more than 90% of the women in these occupations showed increases of 100% or greater for the 4½ years. In the case of male workers, percentage increases were greater than 100% for only one group, namely, weavers on piecework (Table 4). This group, however, represented more than 70% of all men in the specified occupations.

#### CHARTS

Chart 12, constructed from index numbers in Tables 1 and 2, shows graphically the relative rates of increase in hourly and weekly earnings for men and women during the entire period covered by the study. It will be observed that all curves lie quite close together. This suggests that increases were probably granted in the form of uniform percentage advances affecting all workers more or less uniformly. It also indicates a uniformity in average actual hours worked in the different payroll periods considered.

Chart 13 is a bar diagram representing the average absolute hourly earnings of male and female workers as tabulated in Tables 1 and 2.

Chart 14 is a similar diagram constructed from data for weekly earnings in Tables 1 and 2.



**SILK MANUFACTURING INDUSTRY: SUMMARIES OF PAYROLL  
AVERAGES FOR ALL MALE AND FEMALE WORKERS AND FOR  
SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER, 1914, —  
MARCH, 1919**

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 29 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	4,897	51.2	\$ .230	\$11.77	100	100
Sept., 1915	4,922	53.1	.238	12.66	104	108
Sept., 1916	5,010	49.6	.284	14.10	124	120
Sept., 1917	4,778	50.2	.309	15.50	134	132
Sept., 1918	4,151	50.0	.431	21.54	188	183
March, 1919	4,539	50.1	.453	22.69	197	193

**TABLE 2. Total Payroll Data: Females — 29 Establishments**

Sept., 1914	6,312	48.2	.156	7.49	100	100
Sept., 1915	6,456	51.2	.157	8.02	101	107
Sept., 1916	6,794	49.2	.193	9.52	124	127
Sept., 1917	6,619	50.0	.215	10.75	138	144
Sept., 1918	6,095	49.3	.285	14.06	183	188
March, 1919	6,178	48.5	.312	15.10	200	202

**TABLE 3. Warping — Timeworkers: Males — 12 Establishments**

Sept., 1914	167	53.7	.226	12.10	100	100
Sept., 1915	152	53.4	.228	12.19	101	101
Sept., 1916	194	49.0	.263	12.86	116	106
Sept., 1917	153	46.8	.300	14.02	133	116
Sept., 1918	144	50.0	.375	18.78	166	155
March, 1919	107	49.6	.406	20.16	180	167

**TABLE 4. Weaving — Pieceworkers: Males — 27 Establishments**

Sept., 1914	1,605	48.3	.216	10.41	100	100
Sept., 1915	1,765	51.8	.220	11.41	102	110
Sept., 1916	1,900	50.7	.283	14.34	131	138
Sept., 1917	2,168	49.5	.330	16.38	153	157
Sept., 1918	1,741	49.5	.441	21.84	204	210
March, 1919	1,872	47.8	.467	22.30	216	214

**TABLE 5. Weaving — Timeworkers: Males — 10 Establishments**

Sept., 1914	781	46.7	.302	14.11	100	100
Sept., 1915	960	51.6	.265	13.68	88	97
Sept., 1916	767	48.2	.320	15.41	106	109
Sept., 1917	275	50.0	.327	16.36	108	116
Sept., 1918	204	49.2	.433	21.30	143	151
March, 1919	235	50.6	.419	21.20	139	150

**TABLE 6. Misc. Unskilled Labor: Males — 11 Establishments**

Sept., 1914	258	52.8	.251	13.25	100	100
Sept., 1915	292	53.4	.252	13.45	100	102
Sept., 1916	324	52.4	.268	14.03	107	106
Sept., 1917	377	51.2	.309	15.84	123	120
Sept., 1918	417	53.3	.472	25.20	188	190
March, 1919	361	53.8	.477	25.69	190	194

SILK MANUFACTURING INDUSTRY — (*continued*): SUMMARIES  
OF PAYROLL AVERAGES FOR ALL MALE AND FEMALE WORKERS  
AND FOR SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER,  
1914, — MARCH, 1919

(National Industrial Conference Board)

**TABLE 7. Winding — Timeworkers: Females — 12 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	738	51.2	\$ .154	\$7.90	100	100
Sept., 1915	667	43.4	.179	7.78	116	99
Sept., 1916	571	48.8	.171	8.34	111	106
Sept., 1917	387	47.8	.171	8.18	111	104
Sept., 1918	242	45.3	.230	10.45	149	132
March, 1919	291	47.1	.248	11.68	161	148

**TABLE 8. Winding — Pieceworkers: Females — 21 Establishments**

Sept., 1914	646	47.5	.129	6.11	100	100
Sept., 1915	646	49.8	.138	6.88	107	113
Sept., 1916	611	49.2	.156	7.68	121	126
Sept., 1917	681	43.4	.176	7.65	137	125
Sept., 1918	428	54.1	.229	12.40	178	203
March, 1919	526	56.7	.268	12.51	208	205

**TABLE 9. Quilling — Timeworkers: Females — 7 Establishments**

Sept., 1914	98	50.9	.112	5.68	100	100
Sept., 1915	59	50.2	.110	5.54	98	98
Sept., 1916	72	48.7	.128	6.22	114	110
Sept., 1917	70	48.5	.142	6.88	127	121
Sept., 1918	55	48.4	.200	9.71	179	171
March, 1919	56	45.7	.221	10.09	197	178

**TABLE 10. Warping — Pieceworkers: Females — 23 Establishments**

Sept., 1914	633	47.3	.146	6.90	100	100
Sept., 1915	708	53.2	.171	9.08	117	132
Sept., 1916	663	51.2	.191	9.80	131	142
Sept., 1917	591	52.2	.212	11.05	145	160
Sept., 1918	489	53.9	.262	14.10	180	204
March, 1919	615	46.9	.294	13.76	201	200

**TABLE 11. Weaving — Pieceworkers: Females — 26 Establishments**

Sept., 1914	1,965	47.5	.154	7.32	100	100
Sept., 1915	2,042	53.2	.164	8.70	107	119
Sept., 1916	2,320	51.8	.189	9.77	123	134
Sept., 1917	2,353	50.9	.235	11.96	153	164
Sept., 1918	2,161	49.4	.322	15.90	209	217
March, 1919	2,207	49.8	.353	17.56	229	240

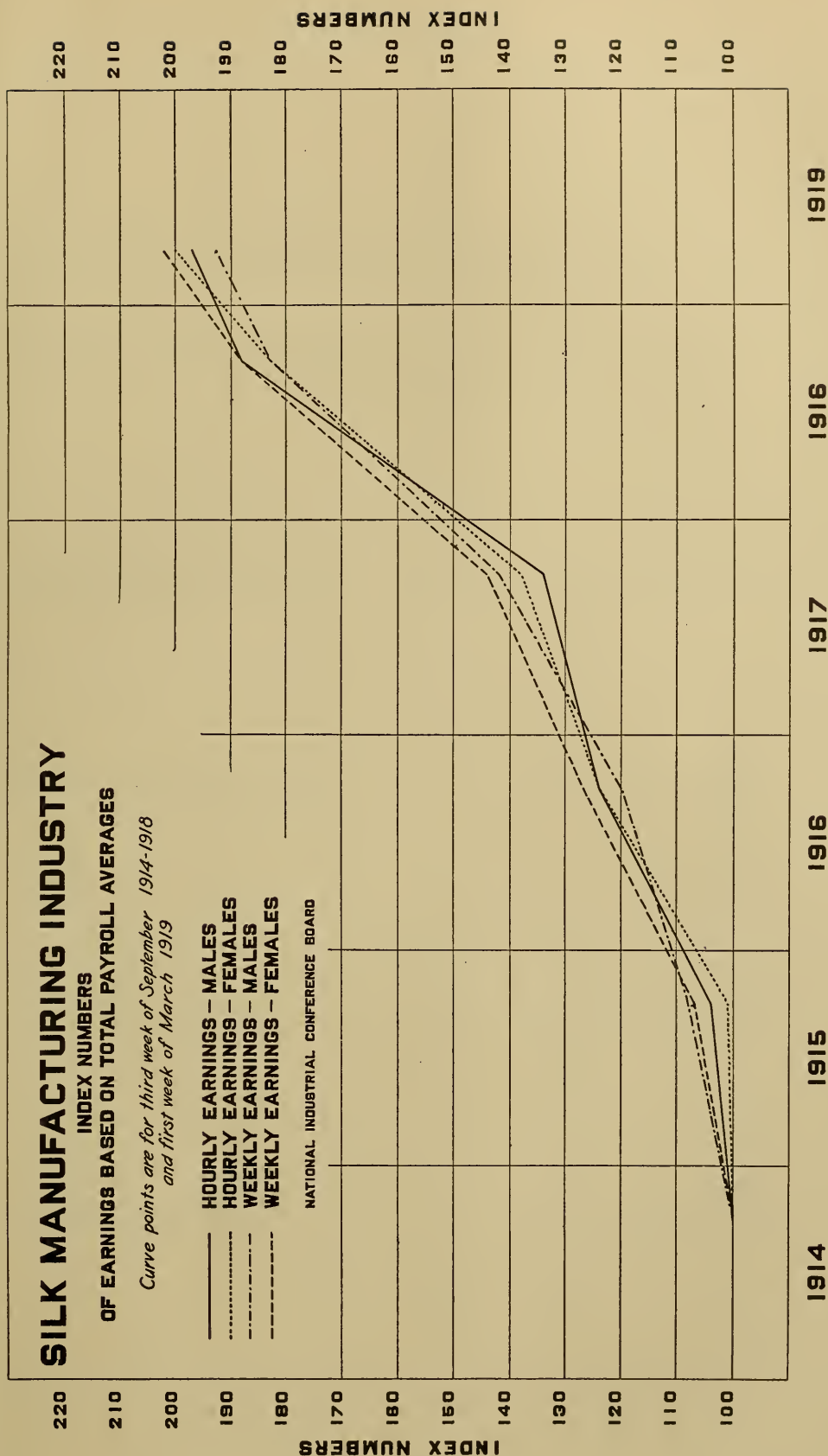
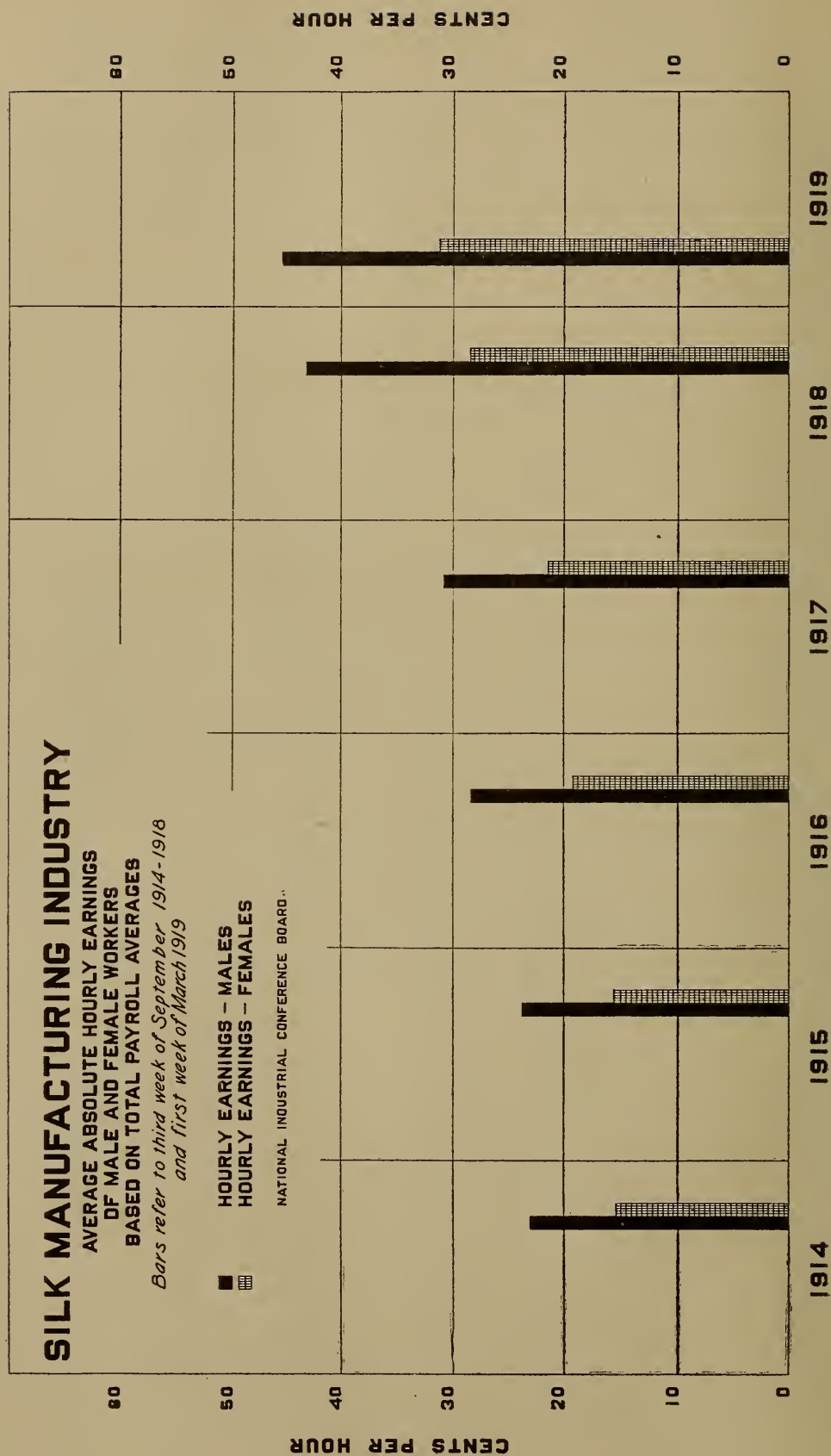
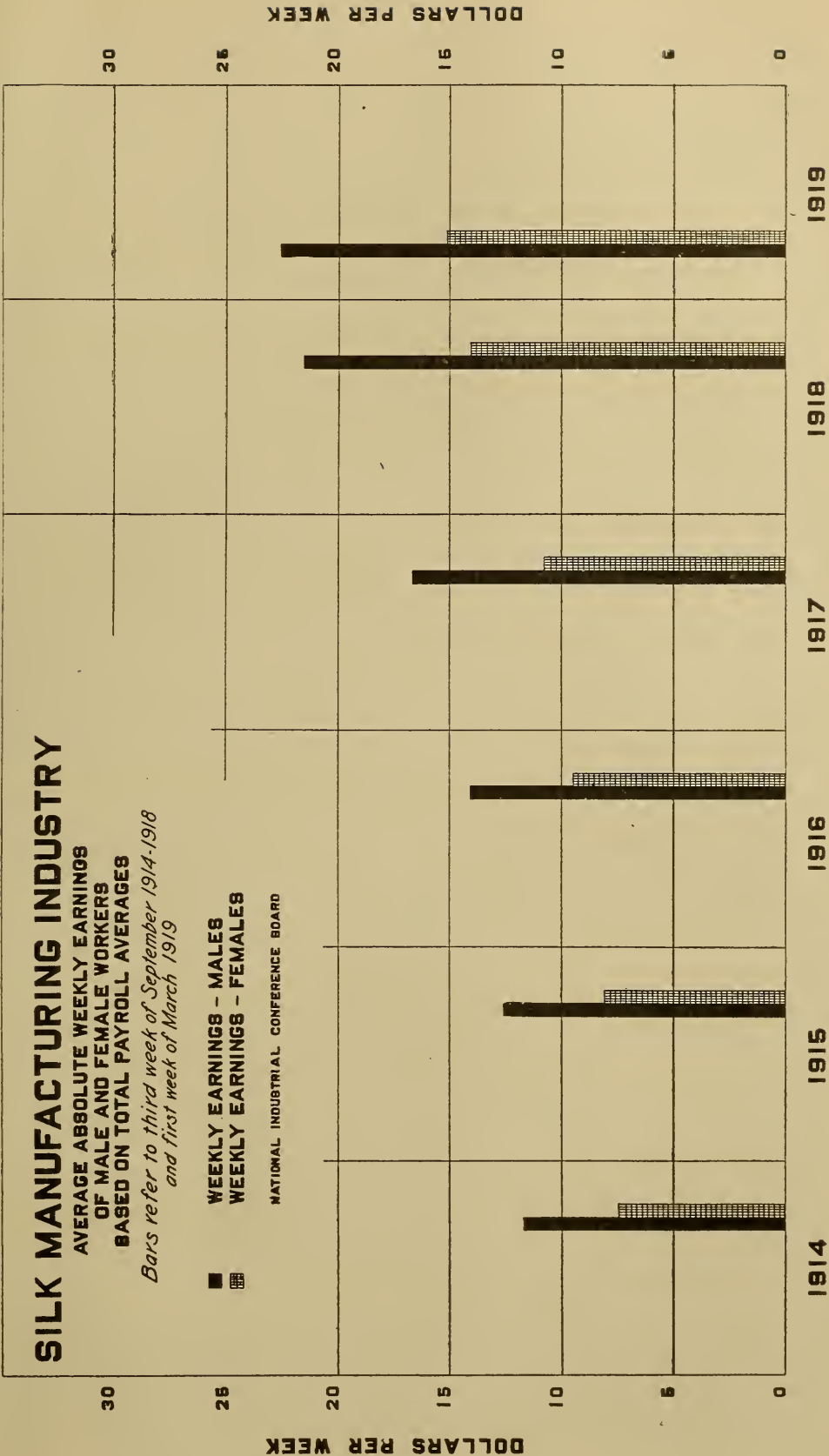


Chart 13, National Industrial Conference Board, Research Report No. 20







## VI

### BOOT AND SHOE INDUSTRY

Wage data applying to the boot and shoe industry were secured from 14 establishments located in the States of New Hampshire, Massachusetts, New Jersey, Ohio, Illinois and Missouri. These establishments employed 7,575 male workers in 1914, 7,349 in 1918, and 7,419 in 1919; female workers numbered 3,841 in 1914, 4,305 in 1918, and 4,667 in 1919. The statistics indicate a decrease of 3% in the number of male workers employed between 1914 and 1918 and of 2% between 1914 and 1919. The number of women employed, on the other hand, increased 12% above the 1914 total up to September, 1918, and to nearly 21% in March, 1919.

Hourly earnings in the boot and shoe industry were generally characterized by lower percentage increases between September, 1914, and September, 1918, than those of the other industries covered by this study. The increase applying to all male workers collectively was only 67% for the period, while for female workers it was lower, namely, 55%. For the different occupations in the industry the increases ranged for the most part between 48% and 75%. No increases were higher than 78%.

While percentage increases were thus comparatively low, this was not true of absolute earnings. On the contrary, in the case of male workers, total payroll averages of hourly earnings in the boot and shoe industry were higher in 1914 than for any of the other industries covered, and in September, 1918, were exceeded only by those for the rubber and metal industries. Hourly earnings of women were also higher than those in the other industries in 1914 and only slightly lower than those of the highest groups in 1918 and 1919.

Important advances in earnings occurred between September, 1918, and March, 1919; thus bringing the percentage increases up to a point of favorable comparison with the other industries.

## HOURLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

Average hourly earnings of all male workers in 14 establishments, collectively (Table 1), increased from 29.2 cents in 1914 to 48.9 cents in 1918, an advance of 67%, and but few important divergences from this percentage of increase were noted in the different occupations. In eight groups (Tables 4, 5, 6, 8, 9, 10, 11 and 12) the percentage increase in hourly averages ranged somewhat above that applying to the total payroll figures, men in the lasting department on piecework (Table 8) showing the greatest advance, namely, 78%. In the five remaining groups (Tables 3, 7, 13, 14 and 15) the percentage increases were smaller than that indicated by the total payroll averages. Of these, an increase of 48% for miscellaneous unskilled labor (Table 15) was the smallest.

Average hourly earnings of female workers irrespective of occupation, in the 14 establishments represented in the total payroll data (Table 2), advanced from 19.2 cents in 1914 to 29.8 cents in 1918, an increase of 55%.

In the data secured, women workers were represented in sufficient numbers to warrant tabulation for only three occupational groups, that of fitting, pieceworkers (Table 17), being the most important. The largest percentage of increase between 1914 and 1918 for any occupation employing women, namely, 72%, occurred in this group. Increases for the other two groups, upper leather cutters (Table 16) and timeworkers in the fitting department (Table 18), were 57% and 29%, respectively.

## HOURLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

Average hourly earnings of all male workers, collectively, in 14 establishments, for the period September, 1918, to March, 1919 (Table 1), increased from 48.9 to 53.9 cents, an advance of 10%. For the period 1914 to 1919 this indicates a total increase in hourly earnings of 85%.

Increases in average hourly earnings for the different occupational groups during the last six months of the period ranged from 1% to 18%. The most noteworthy advances took place in the case of pieceworkers in sole

leather cutting (Table 4) and finishing (Table 14), the increases being 18% in both instances. Actual earnings advanced from 46.9 in 1918 to 55.2 cents in 1919 for the former and from 54 to 63.8 cents for the latter. For the entire 4½-year period, in the case of sole leather cutters the increase amounted to 104%. In all other groups of male workers percentage increases in hourly earnings for the whole period studied ranged well under 100%.

Hourly earnings of females, irrespective of occupational groups, advanced from 29.8 to 30.8 cents in the period between September, 1918, and March, 1919 (Table 2), an increase of over 3%. For the period September, 1914, to March, 1919, the increases totaled 60%. Somewhat greater increases for the six months period were noted in the occupational groups, namely, 9% for upper leather cutting (Table 16), 4% for pieceworkers in the fitting department (Table 17), and 17% for timeworkers in that department (Table 18).

For the entire period studied, pieceworkers in the fitting department received an increase of 80%, timeworkers in the same department, 50%, and timeworkers in the cutting department, 71%.

Comparison of the total payroll averages for males and females, and of averages for occupations which have both men and women workers, indicates generally a considerably higher percentage of increase in hourly earnings of male workers. In the total payroll data (Tables 1 and 2) for the period 1914 to 1919, males received an increase of 85% as compared with 60% for females. In the upper leather department an advance of 87% is indicated for male workers (Table 5), and of 71% for women (Table 16). In the fitting department, however, the relation was reversed, advances for males and females being 77% (Table 9) and 80% (Table 17), respectively. In all instances there were substantial differences in actual earnings. The total payroll average for males in 1914 was 29.2 cents and for females 19.2 cents per hour.

Data were submitted for both timeworkers and pieceworkers in the following occupational groups: Men — sole leather cutting (Tables 3 and 4), upper leather cutting (Tables 5 and 6), lasting (Tables 7 and 8), and finishing (Tables 13 and 14); women — fitting (Tables 17 and 18). In four out of five of these groups percentage



increases in hourly earnings for pieceworkers were substantially greater than for timeworkers. Thus for females on piecework in the fitting department the increase was 80%, while for timeworkers it was only 50%; for male pieceworkers in the sole leather department the increase was 104% against only 69% for timeworkers; for male pieceworkers in the lasting department it was 94% against 65% for timeworkers, and for male finishers 93% and 77% respectively. In upper leather cutting an exception to the rule was found, timeworkers receiving an increase of 87% for the 4½-year period as compared with 78% for pieceworkers.

It should be borne in mind that these differences in percentage increases of timeworkers and pieceworkers may not be an accurate measure of the relative effort made by these two groups of workers, since the tasks and the conditions of work while similar, may not have been identical.

#### WEEKLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

Wide differences in average hours worked per week in 1914, as compared with 1918, were few in number, and consequently percentage increases in weekly earnings in most groups did not differ materially from those in hourly earnings. In the total payroll averages for males, weekly earnings increased from \$14.70 in 1914 to \$24.04 in 1918, an advance of 64% as compared with 67% in hourly earnings. In seven of the occupational groups (Tables 4, 5, 7, 9, 12, 13, 14) percentage increases in weekly earnings ranged under those for hourly earnings. The most notable differences were found in the case of upper leather cutting, timeworkers (Table 5), and sole leather cutting, pieceworkers (Table 4). In the former group weekly earnings increased 60% as compared with 73% for hourly earnings, actual weekly earnings advancing from \$15.49 in 1914 to \$24.76 in 1918. In the latter group weekly earnings advanced from \$14.01 in 1914 to \$22.17 in 1918, an increase of 58% as compared with 73% in hourly earnings. In six occupational groups (Tables 3, 6, 8, 10, 11 and 15) percentage increases in weekly earnings were equal to or higher than the increases in hourly earnings. The differences were slight, however, the divergence in the case of upper leather cutters on piece-

work (Table 6) being the greatest. In this group weekly earnings increased from \$14.02 in 1914 to \$27.30 in 1918, an increase of 95% as compared with 69% for hourly earnings.

## WEEKLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

In the case of male workers for this period, two general tendencies are observed, namely, a substantial increase in hourly earnings and a reduction, somewhat less marked, in average hours worked per week. As a result weekly earnings in March, 1919, while above those for September, 1918, did not increase in the same proportion as the hourly earnings. For all male workers combined (Table 1), weekly earnings advanced between September, 1918, and March, 1919, from \$24.04 to \$25.90, an increase of 7½%. In nearly all occupational groups, for the six months period, advances were shown in weekly earnings ranging from 4% to 17%. The latter increase was indicated in the case of male finishers on piecework (Table 14), whose weekly earnings advanced from \$25.77 to \$30.13. In two groups only was a decrease noted for this period in weekly earnings. These were pieceworkers in fitting (Table 9), in which case the decline was slight, and pieceworkers in upper leather cutting (Table 6), whose earnings fell from \$27.30 to \$23.62, a decrease of 13½%, due to a very sharp reduction in average hours worked.

Advances in hourly earnings of female workers between 1918 and 1919 were small. The average hours worked per week remained unchanged, however, and consequently percentage increases in weekly earnings coincided with those in hourly earnings. According to total payroll data, average weekly earnings rose from \$14.24 to \$14.69 in this period corresponding to the slight increase in average hourly earnings. Average hours worked per week in 1919 were the same as in 1914, and as a result a percentage increase of 60% in weekly earnings coincided with the increase in hourly earnings. In the case of pieceworkers in the fitting department, the most important group, weekly earnings advanced from \$15.91 in 1918 to \$16.22 in 1919, the reduction in hours worked being offset by an advance in hourly earnings.

## SUMMARY

For the boot and shoe industry, as a whole, average hourly earnings of all male workers in the reporting establishments, collectively, increased during the first four years covered by the study from 29.2 to 48.9 cents per hour, or by 67%. During the six months between September, 1918, and March, 1919, these earnings advanced to 53.9 cents per hour, thus bringing the increase for the entire period up to 85%. For female workers in the industry, hourly earnings increased from 19.2 cents in 1914 to 29.8 cents in 1918, or by 55%. In March, 1919, these earnings averaged 30.8 cents per hour; the increase for the entire 4½ years was 60%.

Increases in hourly earnings in the specified occupational groups of male workers for the 4½ years were in most cases somewhat lower than that indicated by the total payroll averages. The lowest increase for the period was 64% and applied to miscellaneous unskilled labor (Table 15); the highest, 104%, applied to sole leather cutters on piecework (Table 4). Increases for the remaining groups ranged for the most part between 70% and 90%. For the three groups of female workers specified, the increases for the 4½ years were, 50%, 71% and 80%, respectively.

Averages of weekly earnings of male workers in the industry increased during the first 4 years covered by the study from \$14.70 to \$24.04, or by 64%. Those of women increased during the period from \$9.18 to \$14.24, or by 55%.

Increases in weekly earnings in the specified occupational groups were in a majority of instances substantially the same as those in hourly earnings up to September, 1918.

For the period between September, 1918, and March, 1919, weekly earnings, both according to total payroll averages and to those applying to the separate groups, showed further increases, but these were in most cases less marked than the increases in hourly earnings.

## CHARTS

Chart 15 is based on total payroll figures for all male and female workers collectively and shows the relative rates of increase in the earnings of the two groups. It

will be observed that the earnings of women increased less than those of men.

Chart 16 shows by bar diagrams comparisons of average hourly earnings of male and female workers for each period.

Chart 17 is similar to Chart 16 except that the comparisons are of weekly earnings.

Chart 18 contains index number curves for the more important groups of male workers. In four of the six groups represented, earnings increased at practically the same rate up to September, 1918.



**BOOT AND SHOE MANUFACTURING INDUSTRY: SUMMARIES OF  
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1914,—MARCH, 1919**

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 14 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	7,575	50.3	\$ .292	\$14.70	100	100
Sept., 1915	7,259	50.8	.302	15.33	104	104
Sept., 1916	8,241	51.1	.325	16.60	112	113
Sept., 1917	7,373	49.9	.388	19.36	133	132
Sept., 1918	7,349	49.2	.489	24.04	167	164
March, 1919	7,419	48.0	.539	25.90	185	176

**TABLE 2. Total Payroll Data: Females — 14 Establishments**

Sept., 1914	3,841	47.9	.192	9.18	100	100
Sept., 1915	3,605	49.3	.193	9.53	101	104
Sept., 1916	4,191	50.5	.207	10.45	108	114
Sept., 1917	4,308	47.0	.243	11.42	127	125
Sept., 1918	4,305	47.7	.298	14.24	155	155
March, 1919	4,667	47.7	.308	14.69	160	160

**TABLE 3. Sole Leather Cutting — Timeworkers: Males — 9 Estab.**

Sept., 1914	458	48.4	.254	12.31	100	100
Sept., 1915	451	49.4	.248	12.28	98	100
Sept., 1916	486	52.0	.252	13.10	99	106
Sept., 1917	400	48.5	.303	14.69	119	118
Sept., 1918	432	49.6	.405	20.12	160	162
March, 1919	372	49.1	.428	21.04	169	171

**TABLE 4. Sole Leather Cutting — Pieceworkers: Males — 9 Estab.**

Sept., 1914	129	51.7	.271	14.01	100	100
Sept., 1915	125	51.9	.290	15.05	107	107
Sept., 1916	156	53.6	.323	17.35	119	124
Sept., 1917	110	48.4	.351	16.98	130	121
Sept., 1918	113	47.3	.469	22.17	173	158
March, 1919	97	46.3	.552	25.51	204	182

**TABLE 5. Upper Leather Cutting — Timeworkers: Males — 11 Estab.**

Sept., 1914	741	53.6	.289	15.49	100	100
Sept., 1915	758	50.8	.302	14.34	105	99
Sept., 1916	826	50.6	.319	16.12	110	104
Sept., 1917	736	49.3	.391	19.25	135	124
Sept., 1918	682	49.6	.499	24.76	173	160
March, 1919	538	49.1	.539	26.45	187	171

**TABLE 6. Upper Leather Cutting — Pieceworkers: Males — 8 Estab.**

Sept., 1914	527	42.3	.331	14.02	100	100
Sept., 1915	450	50.8	.298	15.13	90	108
Sept., 1916	565	47.2	.411	16.65	124	119
Sept., 1917	447	49.5	.394	19.51	119	139
Sept., 1918	535	48.9	.559	27.30	169	195
March, 1919	555	40.0	.591	23.62	178	169

BOOT AND SHOE MANUFACTURING INDUSTRY — (*continued*):  
SUMMARIES OF PAYROLL AVERAGES FOR ALL MALE AND  
FEMALE WORKERS AND FOR SPECIFIED OCCUPATIONAL GROUPS,  
SEPTEMBER, 1914,— MARCH, 1919

(National Industrial Conference Board)

**TABLE 7. Lasting — Timeworkers: Males — 9 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	325	52.6	\$ .226	\$11.90	100	100
Sept., 1915	266	49.2	.253	12.61	112	106
Sept., 1916	294	50.5	.251	12.69	111	107
Sept., 1917	339	48.5	.290	14.05	128	118
Sept., 1918	273	49.8	.368	18.30	163	154
March, 1919	264	51.1	.373	19.07	165	160

**TABLE 8. Lasting — Pieceworkers: Males — 11 Establishments**

Sept., 1914	1,055	49.1	.315	15.44	100	100
Sept., 1915	1,000	49.5	.320	15.82	102	103
Sept., 1916	1,133	51.0	.339	17.28	108	112
Sept., 1917	1,007	48.2	.429	20.70	136	134
Sept., 1918	936	48.9	.562	27.50	178	178
March, 1919	1,075	47.2	.612	28.90	194	187

**TABLE 9. Fitting — Pieceworkers: Males — 8 Establishments**

Sept., 1914	211	49.0	.274	13.44	100	100
Sept., 1915	210	49.0	.286	13.99	104	104
Sept., 1916	220	49.5	.301	14.87	110	111
Sept., 1917	253	47.5	.317	15.05	116	112
Sept., 1918	163	48.9	.482	23.58	176	175
March, 1919	156	47.6	.486	23.17	177	172

**TABLE 10. Making — Pieceworkers: Males — 8 Establishments**

Sept., 1914	419	47.6	.324	15.44	100	100
Sept., 1915	367	51.5	.354	18.21	109	118
Sept., 1916	432	52.0	.387	20.11	119	130
Sept., 1917	366	52.3	.405	21.15	125	137
Sept., 1918	404	50.1	.555	27.81	171	180
March, 1919	395	50.9	.586	29.83	181	193

**TABLE 11. Stitching — Pieceworkers: Males — 5 Establishments**

Sept., 1914	67	48.9	.365	17.84	100	100
Sept., 1915	77	48.5	.403	19.51	110	109
Sept., 1916	90	54.3	.448	24.32	123	136
Sept., 1917	87	51.2	.625	32.00	172	179
Sept., 1918	91	49.7	.628	31.20	172	175
March, 1919	84	47.4	.687	32.58	189	183

**TABLE 12. Bottoming — Pieceworkers: Males — 7 Establishments**

Sept., 1914	828	51.9	.340	17.66	100	100
Sept., 1915	821	52.8	.364	19.23	107	109
Sept., 1916	939	51.8	.385	19.93	113	113
Sept., 1917	895	50.8	.437	22.20	129	126
Sept., 1918	940	49.7	.570	28.37	168	161
March, 1919	836	48.0	.626	30.04	184	170

BOOT AND SHOE MANUFACTURING INDUSTRY — (*continued*):  
SUMMARIES OF PAYROLL AVERAGES FOR ALL MALE AND  
FEMALE WORKERS AND FOR SPECIFIED OCCUPATIONAL GROUPS,  
SEPTEMBER, 1914,— MARCH, 1919

(National Industrial Conference Board)

**TABLE 13. Finishing — Timeworkers: Males — 8 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	152	49.7	\$ .217	\$10.79	100	100
Sept., 1915	162	50.8	.218	11.08	101	103
Sept., 1916	162	51.4	.239	12.26	110	114
Sept., 1917	124	49.6	.296	14.65	136	136
Sept., 1918	128	48.8	.357	17.44	165	162
March, 1919	120	48.2	.383	18.46	177	171

**TABLE 14. Finishing — Pieceworkers: Males — 12 Establishments**

Sept., 1914	548	48.8	.330	16.13	100	100
Sept., 1915	537	50.2	.370	18.59	112	115
Sept., 1916	591	51.7	.400	20.68	121	128
Sept., 1917	525	48.7	.421	20.50	128	127
Sept., 1918	498	47.7	.540	25.77	164	160
March, 1919	544	47.2	.638	30.13	193	187

**TABLE 15. Miscel. Unskilled Workers — Timeworkers: Males — 8 Estab.**

Sept., 1914	175	50.6	.215	10.91	100	100
Sept., 1915	167	51.0	.225	11.45	105	105
Sept., 1916	172	53.5	.230	12.27	107	113
Sept., 1917	175	50.6	.253	12.78	118	117
Sept., 1918	175	50.9	.317	16.12	148	148
March, 1919	154	49.1	.352	17.30	164	158

**TABLE 16. Upper Leather Cutting — Timeworkers: Females — 7 Estab.**

Sept., 1914	97	48.9	.173	8.48	100	100
Sept., 1915	80	50.4	.172	8.67	99	102
Sept., 1916	100	52.2	.180	9.41	104	111
Sept., 1917	108	41.8	.249	10.39	144	123
Sept., 1918	157	49.5	.271	13.41	157	158
March, 1919	163	47.4	.296	14.01	171	165

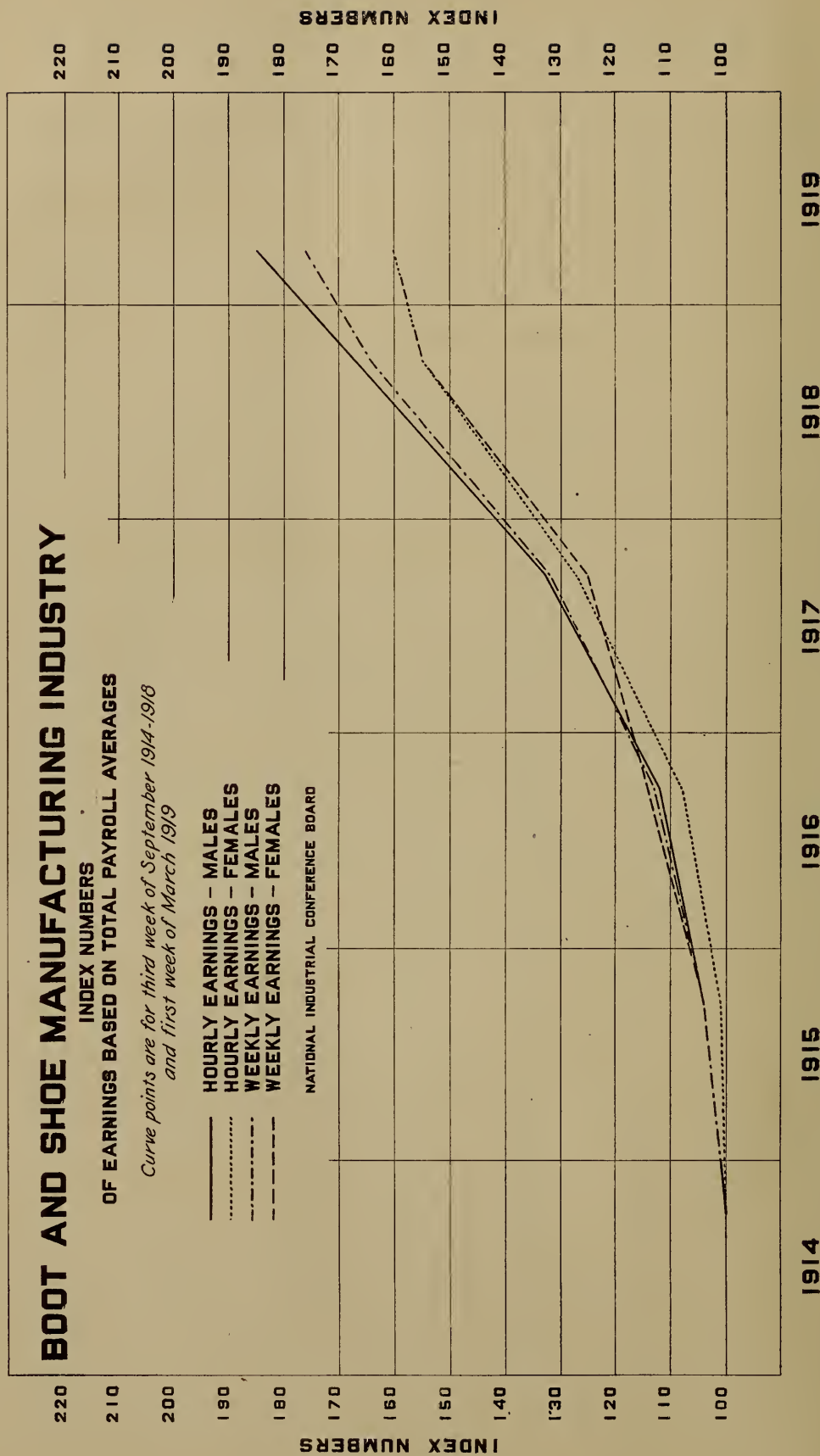
**TABLE 17. Fitting — Pieceworkers: Females — 12 Establishments**

Sept., 1914	1,911	46.6	.195	9.08	100	100
Sept., 1915	1,776	48.9	.199	9.74	102	107
Sept., 1916	2,105	50.7	.217	10.99	111	121
Sept., 1917	2,179	47.7	.271	12.92	139	142
Sept., 1918	1,939	47.3	.336	15.91	172	175
March, 1919	2,012	46.3	.350	16.22	180	179

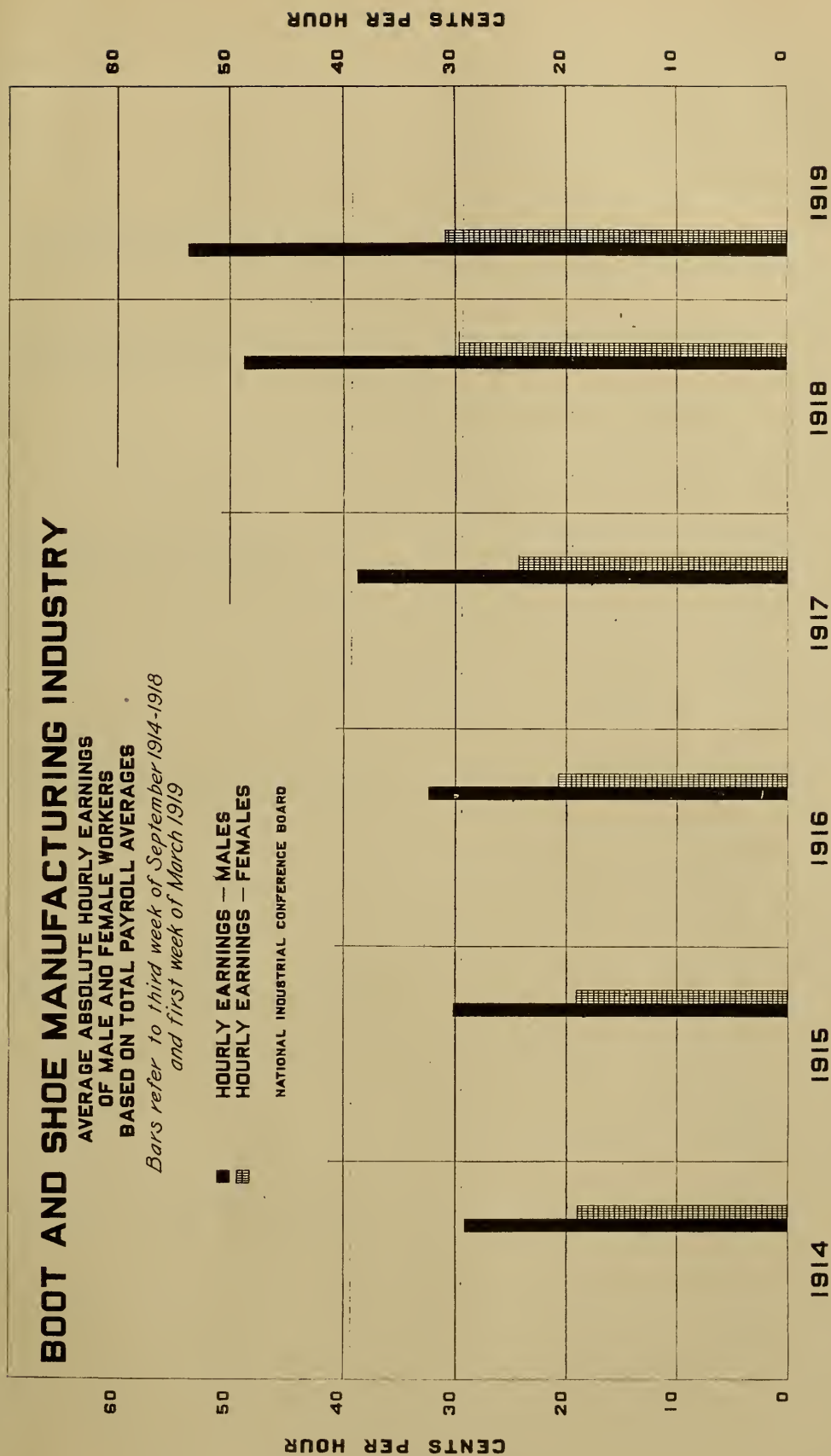
**TABLE 18. Fitting — Timeworkers: Females — 10 Establishments**

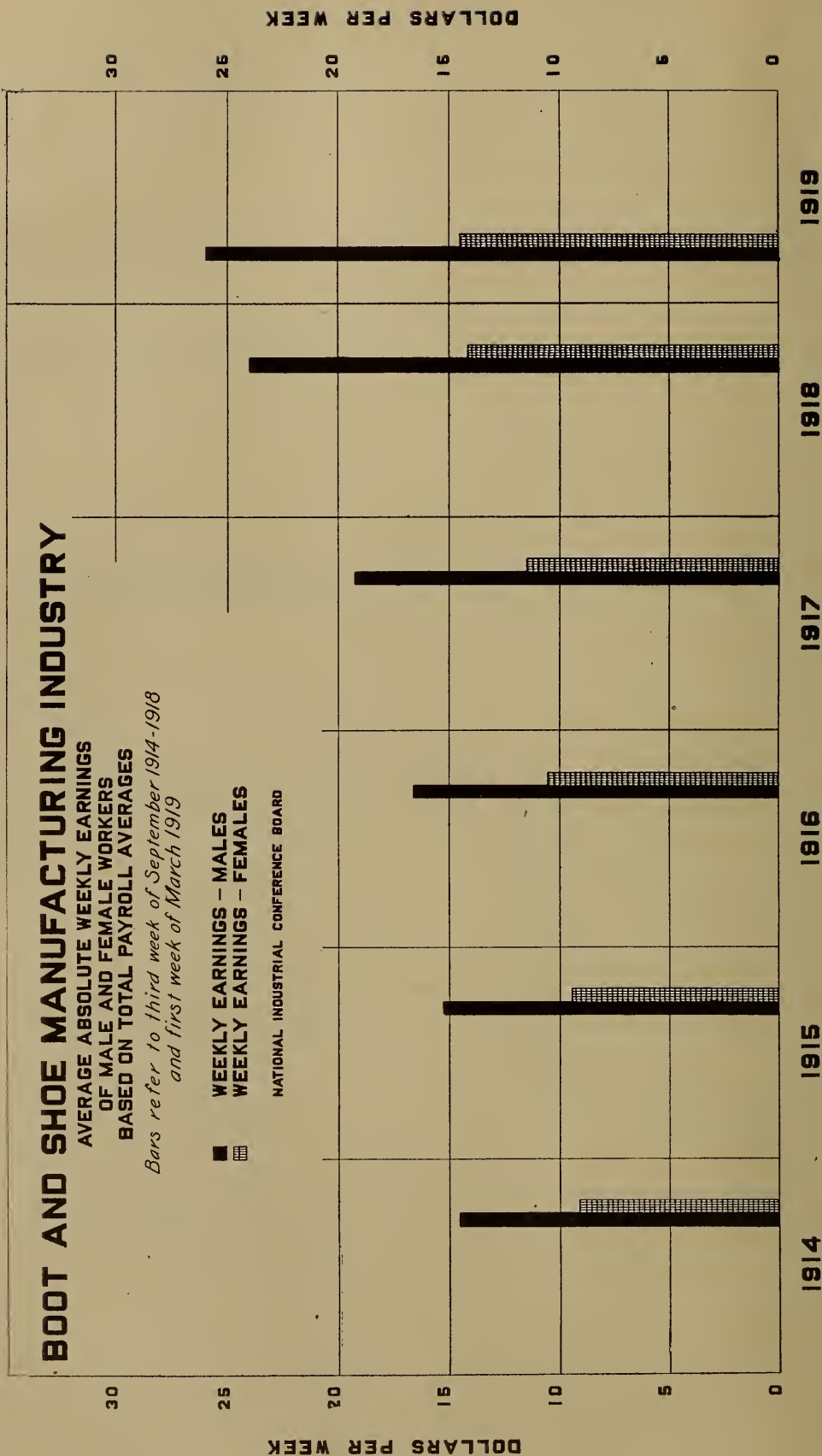
Sept., 1914	397	49.5	.181	8.95	100	100
Sept., 1915	328	50.6	.174	8.80	96	98
Sept., 1916	356	50.0	.188	9.40	104	105
Sept., 1917	433	47.5	.213	10.10	118	113
Sept., 1918	488	47.9	.233	11.19	129	125
March, 1919	506	48.2	.272	13.12	150	147

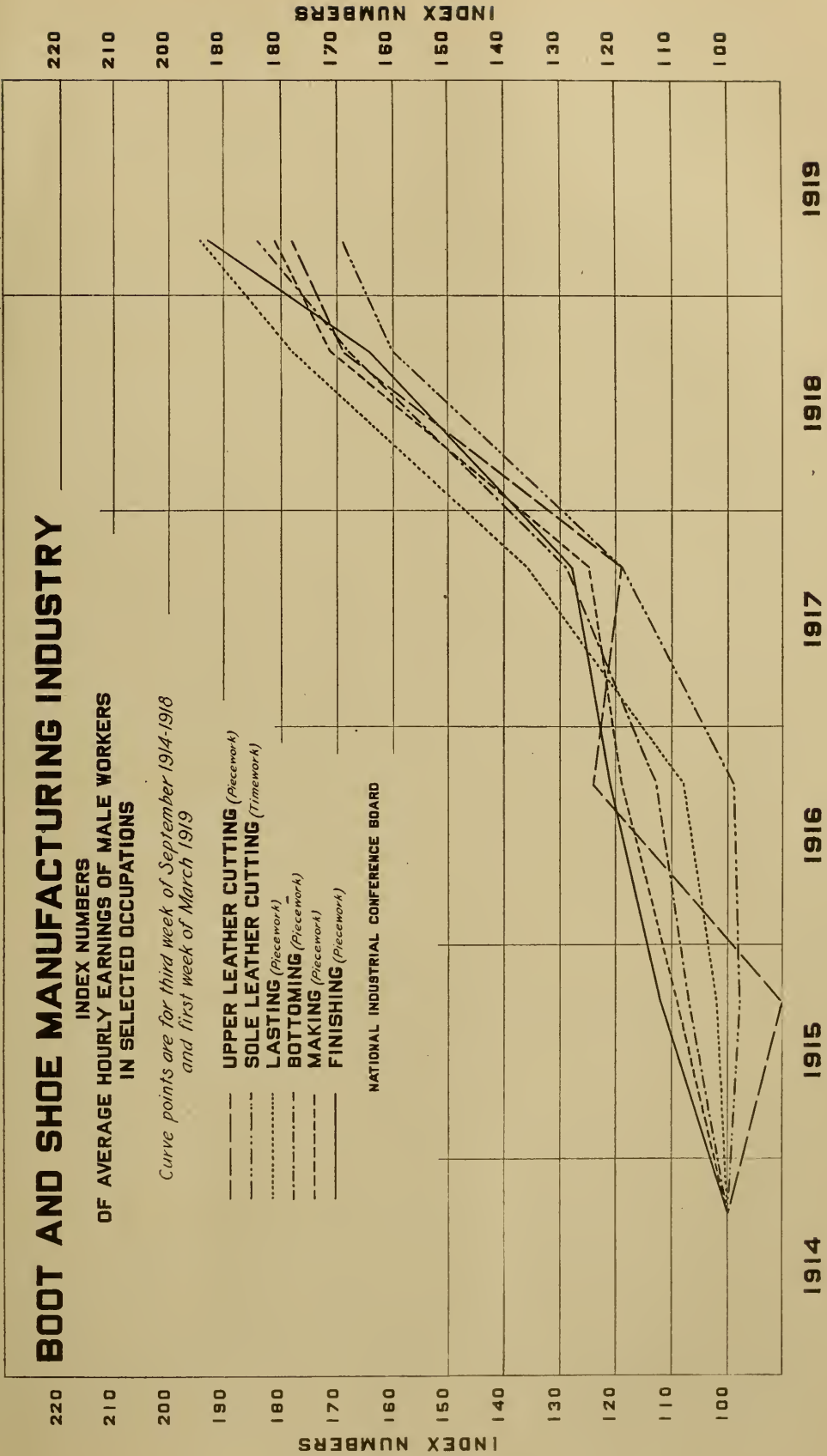












## VII

### PAPER MANUFACTURING INDUSTRY

Wage data applying to male workers in the paper manufacturing industry were secured for the entire period covered by the investigation from 32 identical establishments, most of which are located in the North Atlantic States. These mills employed in the aggregate 8,505 men in the 1914 period, 9,830 in 1918, and 9,579 in March, 1919. Similar data for female workers were received for the six payroll periods from 15 identical mills, also largely distributed over North Atlantic States, and employing in the 1914, 1918 and 1919 periods 779, 941, and 986 women, respectively. The addition of supplemental data from three other important establishments increased the number of males to 12,730 in 1918 and to 12,120 in 1919, and the number of females to 2,326 in 1918 and to 1,568 in 1919.

The establishments included represented various branches of the industry, but no significant differences either in absolute average earnings or in percentage increases were noted as between major groups of mills. Thus, for example, the averages for news print mills were substantially the same as for book paper, writing paper, and specialty mills.

#### HOURLY EARNINGS

##### SEPTEMBER, 1914, TO SEPTEMBER, 1918

Table 1, based on averages for all male workers in the reporting mills, irrespective of occupation, shows that hourly earnings advanced from 23.9 cents in 1914 to 44.8 cents in 1918, the increase, as indicated by the index number, being 88%.

Table 2 contains similar combined data for female workers in 15 identical establishments, hourly earnings in this case advancing from 17.7 cents in 1914 to 29.4 cents in 1918 — an increase of 66%. This is considerably smaller than the increase for men, but since the basis of experience presented in the statistics for women workers is narrower than that for men, it may be that they do



not accurately reflect the wage conditions for women workers in this industry. The absolute earnings of women, however, compared favorably with those for women in the metal and wool manufacturing industries, being somewhat higher in 1914 and only a little lower in 1918.

Data for certain occupational groups of male workers, in most instances, show higher percentage increases than those indicated by the total payroll figures. Hourly earnings of miscellaneous male labor (Table 8), for example, increased 130% during the period and those for rag-room workers (Table 3), beatermen (Table 4), and calender hands (Table 6) increased 90% or more. Earnings of finishers and cuttermen (Table 7) and of machine tenders (Table 5) increased 79% and 72%, respectively. In the case of machine tenders, however, absolute earnings in 1914 and 1918 were higher than those in any other group.

The index numbers of hourly earnings of female workers in the three occupations for which sufficient data were secured to permit of analysis, namely, rag-room workers, both timeworkers and pieceworkers, and finishers and cutters (Tables 9, 10 and 11), show increases of 109%, 124% and 91%, respectively. Average absolute hourly earnings in all of these groups were, however, lower both in 1914 and in 1919 than the general averages applying to female workers collectively (Table 2).

### HOURLY EARNINGS

#### SEPTEMBER, 1918, TO MARCH, 1919

No noticeable change in hourly earnings of either male or female workers was observed for the March, 1919, total payroll averages as compared with those of September, 1918. For male workers (Table 1) average hourly earnings in March were 45 cents and in September, 1918, 44.8 cents per hour. For women (Table 2) the averages were 29.7 and 29.4 cents per hour, respectively.

A similar relation between the averages of March, 1919, and September, 1918, existed in most of the occupational groups. In the case of miscellaneous male labor (Table 8), however, hourly earnings in March were 12½% lower than in September and for female workers on piece rates in the rag-room (Table 10) the decrease was nearly 20%.

## WEEKLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

While, according to the total payroll figures (Table 1), average hourly earnings of men increased 88% during the war period, the corresponding increase in weekly earnings was only 76%. This is due to a reduction in average hours worked in the 1918 period to 50 per week against 53.3 in 1914. Weekly earnings of female workers on the other hand increased more sharply than hourly earnings — 87% against 66%. In this case the average hours worked per week rose from 42.3 in 1914 to 47.5 in 1918.

Comparisons of increases in weekly earnings of the different occupational groups show them to be proportionately smaller in every case than those in hourly earnings. Again the disparity is due to a reduction in actual hours worked in the 1918 period compared with 1914. The fact that a considerable proportion of the mills furnishing data changed in 1916 from the two to the three tour system in the manufacturing departments, or reduced the weekly schedule of work-hours, offers one explanation for the divergence. Weekly earnings of women in the different occupations, except timeworkers in the rag-room (Table 9), also showed relatively lower percentage increases for the period than those applying to hourly earnings.

## WEEKLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

Total payroll figures of weekly earnings of male workers (Table 1) show the same averages for March, 1919, as for September, 1918, viz., \$22.40. For the specific occupational groups tabulated, however, the index numbers for March show a decided decrease in almost every instance from the 1918 averages. In the case of female workers the index numbers for both the total payroll averages and the occupational groups (Tables 2, 9, 10 and 11) are consistently lower for March, 1919, than for the preceding September.

Important reductions in average hours worked per week account for this general falling off in weekly earnings, as it will be noticed that in some groups hourly earnings were unchanged, while in others they were higher (Tables 2, 4, 6, 7 and 11).

## CHARTS

Chart 19, constructed from index numbers of hourly and weekly earnings in Tables 1 and 2, shows the relative rates of increase in earnings of male and female workers.

The bar diagrams in Chart 20 represent average absolute hourly earnings of both male and female workers. Chart 21 is similarly constructed from weekly earnings data.

PAPER MANUFACTURING INDUSTRY: SUMMARIES OF PAYROLL  
AVERAGES FOR ALL MALE AND FEMALE WORKERS AND FOR  
SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER, 1914, —  
MARCH, 1919

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 32 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	8,505	53.3	\$ .239	\$12.73	100	100
Sept., 1915	8,976	52.5	.243	12.75	102	100
Sept., 1916	9,602	51	.295	15.03	124	118
Sept., 1917	9,520	51	.374	19.03	157	150
Sept., 1918	9,830	50	.448	22.40	188	176
March, 1919	9,579	49.8	.450	22.40	189	176

**TABLE 2. Total Payroll Data: Females — 15 Establishments**

Sept., 1914	779	42.3	.177	7.47	100	100
Sept., 1915	856	44.3	.178	7.85	100	105
Sept., 1916	968	46.3	.191	8.80	108	118
Sept., 1917	889	45.3	.230	10.43	130	140
Sept., 1918	941	47.5	.294	13.95	166	187
March, 1919	986	41.3	.297	12.24	168	164

**TABLE 3. Rag-Room — Timeworkers: Males — 11 Establishments**

Sept., 1914	138	55.3	.206	11.40	100	100
Sept., 1915	163	52.5	.208	10.91	101	96
Sept., 1916	154	52.5	.259	13.61	126	120
Sept., 1917	157	46.8	.332	15.47	161	136
Sept., 1918	159	51.5	.405	20.80	196	183
March, 1919	158	47.5	.392	18.68	190	164

**TABLE 4. Beatermen — Timeworkers: Males — 32 Establishments**

Sept., 1914	663	52.8	.232	12.29	100	100
Sept., 1915	749	51.5	.235	12.13	101	99
Sept., 1916	788	49	.295	14.43	127	118
Sept., 1917	793	48	.350	16.82	151	137
Sept., 1918	804	49.5	.440	21.72	190	177
March, 1919	732	46	.440	20.20	190	165

**TABLE 5. Machine Tenders — Timeworkers: Males — 32 Establishments**

Sept., 1914	1,304	50.5	.309	15.62	100	100
Sept., 1915	1,324	50	.313	15.67	101	100
Sept., 1916	1,442	48.3	.376	18.15	122	116
Sept., 1917	1,396	48.8	.448	21.86	145	140
Sept., 1918	1,393	48.5	.530	25.79	172	165
March, 1919	1,361	47.3	.520	24.60	168	157

**TABLE 6. Calender Hands — Timeworkers: Males — 12 Establishments**

Sept., 1914	97	57.3	.204	11.65	100	100
Sept., 1915	104	58.8	.272	15.91	133	137
Sept., 1916	114	45	.319	14.33	157	123
Sept., 1917	121	46	.306	14.06	150	121
Sept., 1918	130	50.3	.403	20.25	198	174
March, 1919	128	43	.414	17.76	203	153



PAPER MANUFACTURING INDUSTRY — (*continued*): SUMMARIES  
OF PAYROLL AVERAGES FOR ALL MALE AND FEMALE WORKERS  
AND FOR SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER,  
1914, — MARCH, 1919

(National Industrial Conference Board)

**TABLE 7. Finishers and Cuttermen—Timeworkers: Males—29 Estab.**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	423	55.5	\$ .227	\$12.65	100	100
Sept., 1915	451	55	.216	11.90	95	94
Sept., 1916	526	53.3	.271	14.40	119	114
Sept., 1917	471	52.8	.330	17.40	145	137
Sept., 1918	496	53.3	.407	21.65	179	171
March, 1919	464	50.8	.420	21.28	185	168

**TABLE 8. Miscellaneous Labor—Timeworkers: Males—16 Establishments**

Sept., 1914	640	54.3	.202	10.94	100	100
Sept., 1915	773	55.5	.204	11.39	101	104
Sept., 1916	775	52.3	.253	13.21	125	121
Sept., 1917	792	52.3	.315	16.43	156	150
Sept., 1918	838	51.3	.465	23.88	230	218
March, 1919	826	50.5	.406	20.45	201	187

**TABLE 9. Rag-Room — Timeworkers: Females — 10 Establishments**

Sept., 1914	161	48.5	.131	6.35	100	100
Sept., 1915	137	40	.141	5.65	108	89
Sept., 1916	166	49.3	.194	9.55	148	150
Sept., 1917	166	46.8	.195	9.13	149	144
Sept., 1918	153	49	.274	13.40	209	211
March, 1919	170	42	.270	11.38	206	179

**TABLE 10. Rag-Room — Pieceworkers: Females — 5 Establishments**

Sept., 1914	98	48.8	.142	6.93	100	100
Sept., 1915	132	45.5	.158	7.31	111	105
Sept., 1916	129	47	.189	8.88	133	128
Sept., 1917	121	43.5	.244	10.62	172	153
Sept., 1918	116	44.8	.318	14.22	224	205
March, 1919	127	37.3	.257	9.57	181	138

**TABLE 11. Finishers and Cuttermen—Timeworkers: Females—9 Estab.**

Sept., 1914	186	51.5	.142	7.29	100	100
Sept., 1915	175	58.3	.154	8.98	109	123
Sept., 1916	194	48.8	.176	8.57	124	118
Sept., 1917	194	46.5	.223	10.38	157	142
Sept., 1918	215	49	.271	13.31	191	183
March, 1919	203	38.5	.276	10.65	195	146

#### ADDITIONAL DATA

In addition to the data received from 32 identical establishments for the entire  $4\frac{1}{2}$ -year period, the statistical basis for the periods 1918 and 1919 is enlarged through the receipt of figures from three other establishments which were unable to supply data for the whole period. A comparison of wages in September, 1918, and March, 1919, including these additional data, is made in Tables 12 to 22.

The incorporation of these additional data with those from the 32 establishments submitting complete reports produced only slight changes in averages of earnings and of hours worked in the two periods.

SUMMARIES OF PAYROLL AVERAGES FOR ALL MALE AND FEMALE  
WORKERS AND FOR SPECIFIED OCCUPATIONAL GROUPS,  
SEPTEMBER, 1918, — MARCH, 1919  
(National Industrial Conference Board)

**TABLE 12. Total Payroll Data: Males — 35 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1918	12,730	55.8	\$ .446	\$24.84	100	100
March, 1919	12,120	48.5	.453	21.96	102	88

**TABLE 13. Total Payroll Data: Females — 18 Establishments**

Sept., 1918	2,326	49	.296	14.48	100	100
March, 1919	1,568	38	.302	11.49	102	79

**TABLE 14. Rag-Room — Timeworkers: Males — 12 Establishments**

Sept., 1918	234	50.8	.400	20.67	100	100
March, 1919	233	44.5	.403	17.92	101	87

**TABLE 15. Beatermen — Timeworkers: Males — 34 Establishments**

Sept., 1918	1,167	49	.436	21.37	100	100
March, 1919	1,044	43.5	.446	19.43	102	91

**TABLE 16. Finishers and Cuttermen — Timeworkers: Males — 31 Estab.**

Sept., 1918	617	53	.403	21.41	100	100
March, 1919	548	48.8	.417	20.32	103	95

**TABLE 17. Machine Tenders — Timeworkers: Males — 34 Establishments**

Sept., 1918	1,580	48.8	.542	26.41	100	100
March, 1919	1,686	45.8	.521	23.84	96	90

**TABLE 18. Miscellaneous Labor — Timeworkers: Males — 17 Estab.**

Sept., 1918	1,698	50.8	.428	21.66	100	100
March, 1919	1,767	47	.445	20.91	104	97

**TABLE 19. Calender Hands — Timeworkers: Males — 13 Establishments**

Sept., 1918	195	50.1	.406	20.32	100	100
March, 1919	225	40.9	.429	17.51	106	86

**TABLE 20. Rag-Room — Timeworkers: Females — 11 Establishments**

Sept., 1918	367	49.5	.277	13.72	100	100
March, 1919	379	36.5	.280	10.25	101	75

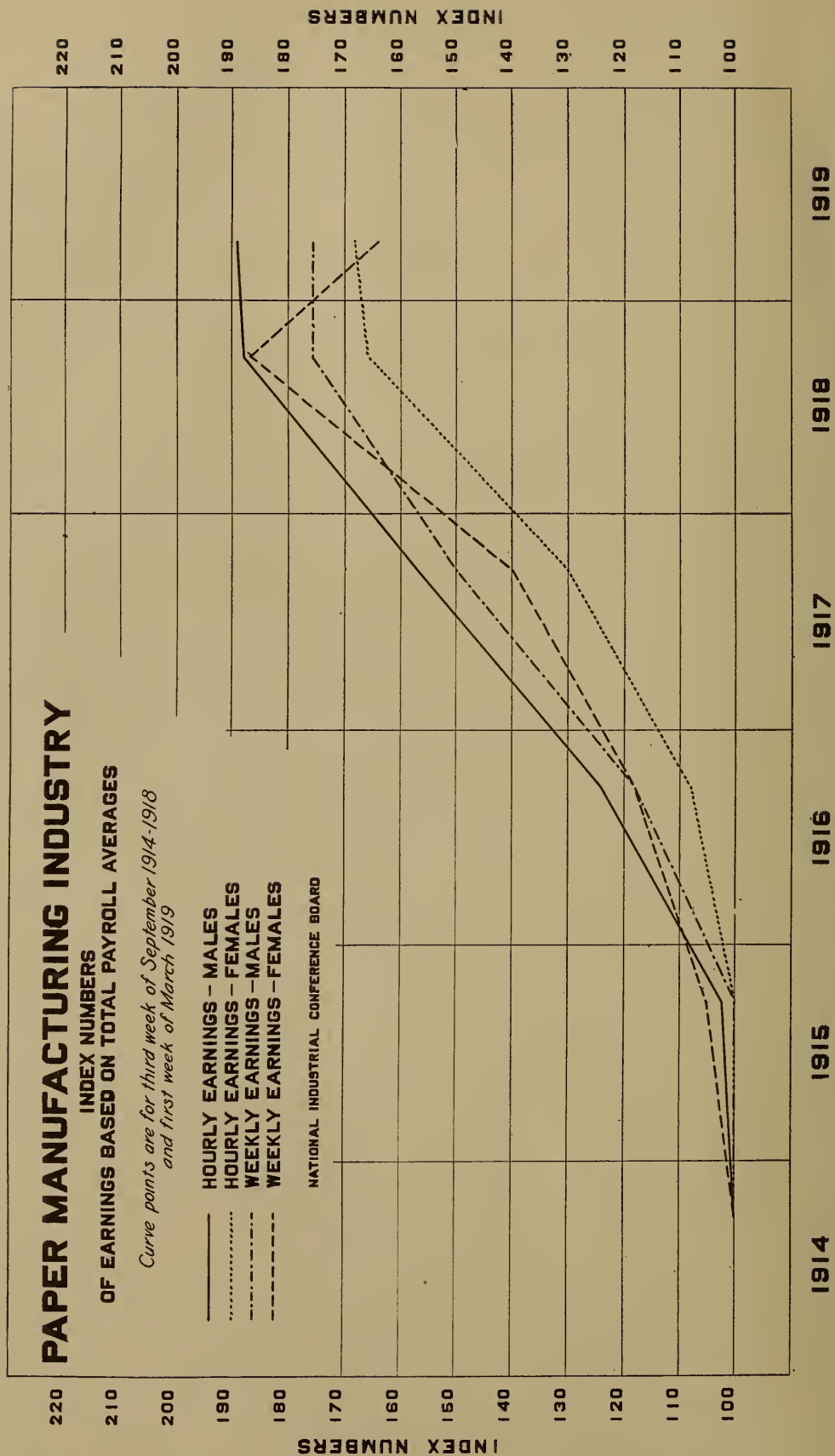
**TABLE 21. Rag-Room — Pieceworkers: Females — 5 Establishments**

Sept., 1918	116	44.8	.318	14.22	100	100
March, 1919	127	37.2	.257	9.57	81	67

**TABLE 22. Finishers, Cuttermen — Timeworkers: Females — 10 Estab.**

Sept., 1918	233	48.8	.264	12.89	100	100
March, 1919	211	38.5	.272	10.48	103	81

Chart 19, National Industrial Conference Board, Research Report No. 20





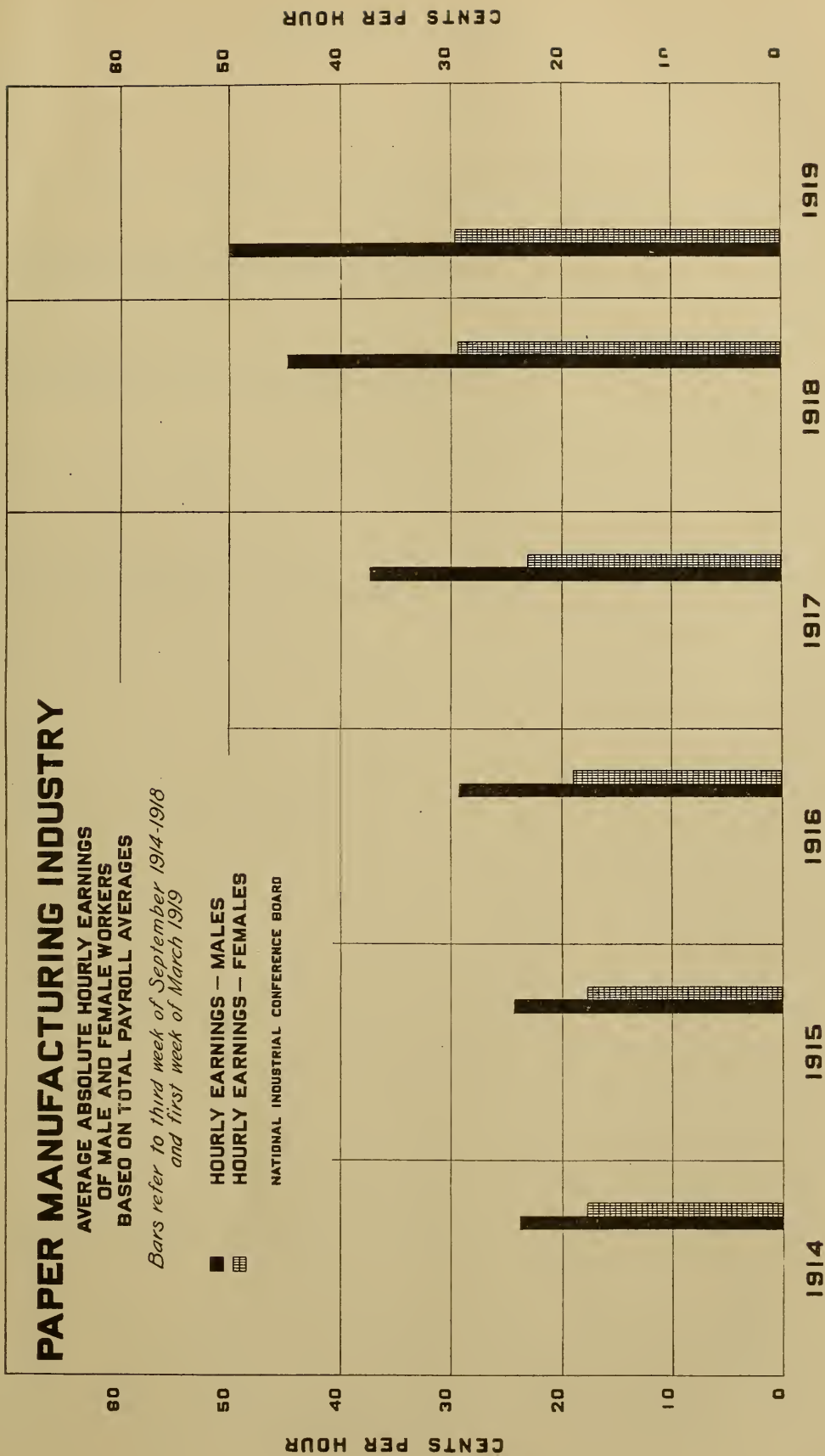
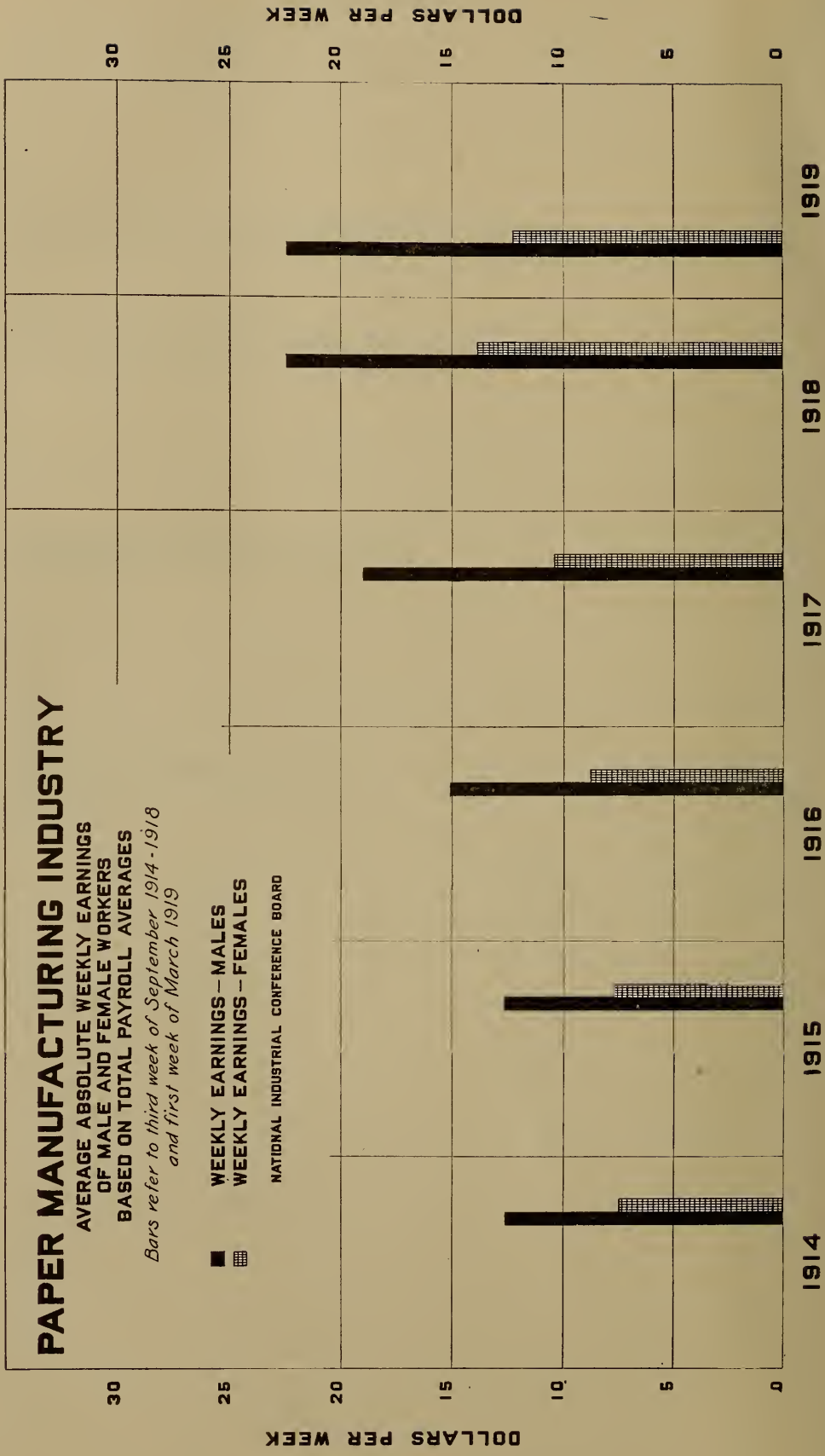


Chart 21, National Industrial Conference Board, Research Report No. 20



## VIII

### RUBBER MANUFACTURING INDUSTRY

Wage data applying to the rubber industry for the period September, 1914, to March, 1919, were obtained from eight identical establishments, located in the States of Massachusetts, Connecticut, New York, Pennsylvania, Delaware and Ohio, and employing 9,612 male workers in 1914, 16,722 in 1918, and 21,918 in 1919. Six of these establishments furnished data for the female workers employed, numbering 1,819 in 1914, 3,501 in 1918, and 3,431 in 1919.

For males (Table 1) the statistics show an increase of 74% in the number employed in 1918, and of 128% in 1919, compared with 1914 totals. The number of females employed in 1918 and 1919 was 93% and 89% greater, respectively, than in 1914.

Data for the years 1918 and 1919 only were received from three additional establishments located one each in Connecticut, Massachusetts and Ohio. These figures were added to those of the eight establishments reporting for the entire period, thus increasing the total number of employees for 1918 to 17,559 men and 3,879 women. In March, 1919, the number of men had still further increased to 22,674, while the number of women had decreased to 3,796.

#### HOURLY EARNINGS

##### SEPTEMBER, 1914, TO SEPTEMBER, 1918

Average hourly earnings of male workers in eight identical establishments, based on total payroll data (Table 1), increased 100% between September, 1914, and September, 1918. These averages were 28.8 cents per hour in 1914 and 57.5 cents in 1918. Total payroll figures for female workers in six establishments (Table 2) show an increase of only 42% during the period, the average hourly earnings being 17.4 cents in 1914 and 24.7 cents in 1918.

Earnings data in sufficient quantity to warrant tabulation by occupation were received for only three groups. Tables 3, 4 and 5 contain averages for male workers in calendering, making (footwear), and miscellaneous un-

skilled labor, the total number of workers in these groups representing less than 12% of the number covered by the total payroll figures. For calender hands the increase during the period was 67%, against 89% for each of the other two groups. The hourly averages in 1914 were 22.5 cents for calender hands, 19.1 cents for makers, and 20.5 cents for miscellaneous unskilled labor. In 1918 these averages were 37½ cents, 36.1 cents, and 38.8 cents per hour, respectively.

#### HOURLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

Hourly earnings of both male and female workers (Tables 1 and 2) showed substantial increases in 1919 over the 1918 averages. For men the increase was about 6½%, while the earnings of women increased 18% during the period. Actual earnings of males, based on total payroll data, advanced from 57.5 cents to 61.2 cents per hour, those of females from 24.7 cents to 29.2 cents per hour. Earnings of male workers in the three groups tabulated in Tables 3, 4 and 5 increased 9%, 10% and 5½%, respectively.

#### WEEKLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

The average number of hours worked per week by the male workers as a group (Table 1) remained fairly constant for the period 1914 to 1918, and as a result the percentage increases in weekly earnings very nearly coincide with those in hourly earnings. The weekly averages advanced from \$14.00 in 1914 to \$28.60 in 1918, an increase of 104%. Average hours worked per week were 48.8 in 1914 and 49.6 in 1918. Considerable variations in average hours worked, accompanied by corresponding differences in percentage increases in hourly and weekly earnings, were noted in the figures for the three occupations tabulated. Calender hands (Table 3), for example, averaged 49 hours in 1914 and 66 hours in 1918, and increases in hourly and weekly earnings were 67% and 125%, respectively. In the making department (Table 4) average hours were more nearly constant in the two periods,— 54.8 in 1914 and 53.6 in 1918,—and the increases in hourly and weekly earnings correspondingly similar, 89% and 85%, respectively. Miscellaneous unskilled labor (Table 5) averaged



58.2 hours in 1914 and 60.2 hours in 1918, and the increase was proportionately higher for weekly than for hourly earnings.

Weekly earnings of female workers, based on total payroll data, increased from \$9.25 in 1914 to \$12.94 in 1918, an advance of 40% as compared with 42% in hourly earnings. Average hours in 1918 were only slightly less than those of 1914.

### WEEKLY EARNINGS

#### SEPTEMBER, 1918, TO MARCH, 1919

Average weekly earnings of all male workers combined, in eight establishments (Table 1), were \$29.35 in March, 1919, against \$28.60 in September, 1918, an increase of 2½% for this period and of 110% for the 4½ years covered by the investigation. In calendering (Table 3), weekly earnings in March, 1919, were \$23.50 against \$24.80 in September, 1918; this represents an increase for the 4½ years of 114%. For workers in making (Table 4) and on miscellaneous unskilled work (Table 5) weekly earnings for the 1919 period showed additional increases in comparison with 1918 averages, the increases for the 4½ years for the two groups being 112% and 101%, respectively.

Weekly earnings of women, on account of larger hourly earnings, advanced from \$12.94 in 1918 to \$14.90 in 1919, representing an increase of 15% for that period and of 61% for the 4½ years covered by the study. The latter gain is slightly smaller than the increase in hourly earnings for the period, due to the smaller number of hours worked in March, 1919, than in September, 1914.

### CHARTS

Chart 22 shows the relative changes occurring in hourly and weekly earnings of male and female workers, the curves being constructed from index numbers of earnings derived from total payroll averages. The curves indicate clearly that the earnings of men increased considerably more than those of women during the period, and also that hourly and weekly earnings of each increased at nearly the same rate.

Chart 23 is a bar diagram upon which the absolute hourly earnings of men and women, likewise based on total payroll averages, are presented.

Chart 24 is similar to Chart 23, except that the bars represent average weekly earnings.

**RUBBER MANUFACTURING INDUSTRY: SUMMARIES OF PAYROLL  
AVERAGES FOR ALL MALE AND FEMALE WORKERS AND FOR  
SPECIFIED OCCUPATIONAL GROUPS, SEPTEMBER, 1914, —  
MARCH, 1919**

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 8 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	9,612	48.8	\$ .288	\$14.00	100	100
Sept., 1915	12,701	48.3	.310	14.95	108	107
Sept., 1916	15,863	48.7	.382	18.60	133	133
Sept., 1917	19,225	48.9	.466	22.80	162	163
Sept., 1918	16,722	49.6	.575	28.60	200	204
March, 1919	21,918	48.0	.612	29.35	212	210

**TABLE 2. Total Payroll Data: Females — 6 Establishments**

Sept., 1914	1,819	53.2	.174	9.25	100	100
Sept., 1915	1,992	54.1	.189	10.20	109	110
Sept., 1916	2,479	51.6	.208	10.76	120	117
Sept., 1917	3,397	51.7	.228	11.80	131	128
Sept., 1918	3,501	52.2	.247	12.94	142	140
March, 1919	3,431	51.1	.292	14.90	168	161

**TABLE 3. Calendering — Timeworkers: Males — 7 Establishments**

Sept., 1914	325	49.0	.225	11.00	100	100
Sept., 1915	391	55.6	.216	12.04	96	109
Sept., 1916	424	62.4	.242	15.12	108	138
Sept., 1917	454	63.0	.288	18.12	128	165
Sept., 1918	421	66.0	.375	24.80	167	225
March, 1919	439	57.5	.409	23.50	182	214

**TABLE 4. Making — Timeworkers: Males — 6 Establishments**

Sept., 1914	373	54.8	.191	10.45	100	100
Sept., 1915	370	51.8	.200	10.35	105	93
Sept., 1916	611	52.0	.227	11.81	119	113
Sept., 1917	788	51.6	.300	15.50	157	148
Sept., 1918	767	53.6	.361	19.35	189	185
March, 1919	569	55.8	.398	22.20	208	212

**TABLE 5. Miscellaneous Unskilled Labor—Timeworkers: Males—6 Estab.**

Sept., 1914	362	58.2	.205	11.92	100	100
Sept., 1915	467	62.2	.216	13.45	105	113
Sept., 1916	516	58.0	.240	13.95	117	117
Sept., 1917	731	58.8	.293	17.22	143	145
Sept., 1918	691	60.2	.388	23.36	189	196
March, 1919	888	58.7	.409	23.98	200	201

### ADDITIONAL DATA

The addition of data from three establishments employing a total of 837 male and 378 female workers in 1918 and of 756 male and 365 female workers in 1919, as noted in the tables following, produced almost no effect in the averages for those years when combined with the figures for the eight establishments reporting for the entire 4½-year period. Average hourly earnings, based on total payroll data for males, were 56.8 cents in 1918 for the 11 establishments against 57.5 cents for the eight establishments. Averages for 1919 (Tables 1 and 6) were 60.7 cents per hour in the 11, and 61.2 cents in the eight establishments. Changes resulting from the addition of data for the three establishments in the case of female workers were equally unimportant.

**TABLE 6. Total Payroll Data: Males — 11 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1918	17,559	50.0	\$ .568	\$28.40	100	100
March, 1919	22,674	48.6	.607	29.51	107	104

**TABLE 7. Total Payroll Data: Females — 9 Establishments**

Sept., 1918	3,879	52.4	.248	12.98	100	100
March, 1919	3,796	51.2	.288	14.79	116	114

**TABLE 8. Calendering — Timeworkers: Males — 10 Establishments**

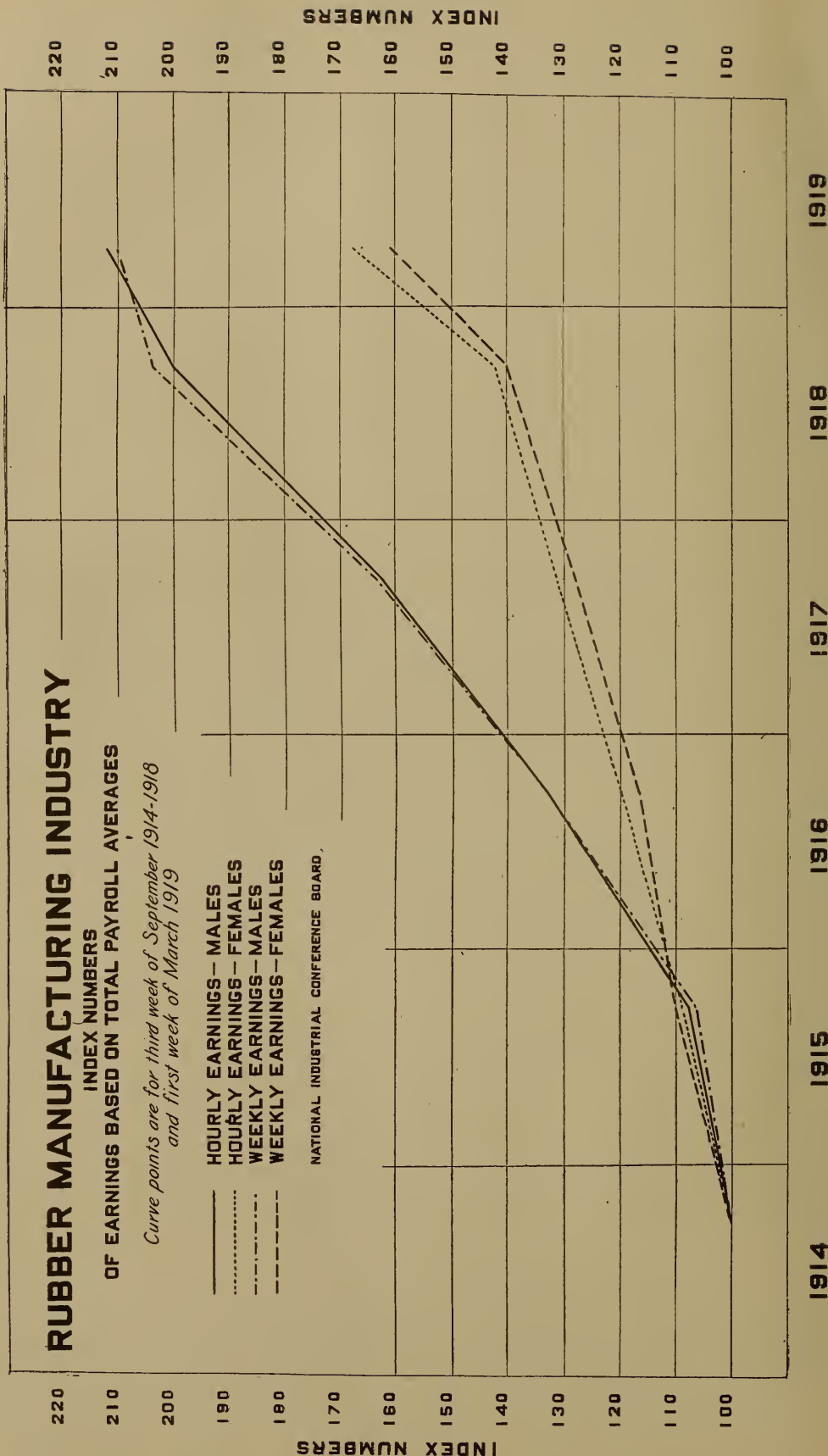
Sept., 1918	461	65.0	.376	24.40	100	100
March, 1919	475	58.0	.409	23.71	109	97

**TABLE 9. Making — Timeworkers: Males — 7 Establishments**

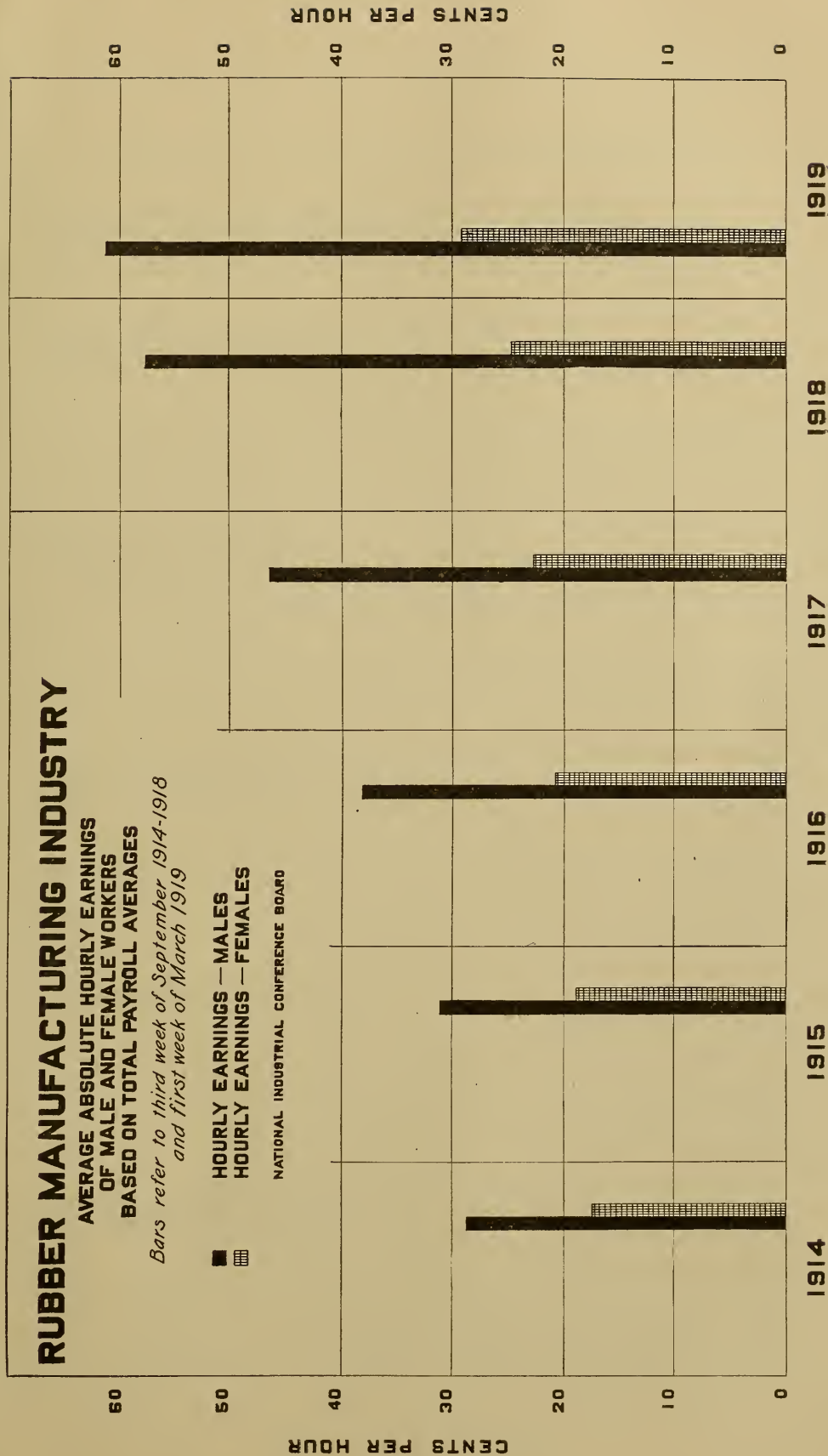
Sept., 1918	932	52.7	.359	18.90	100	100
March, 1919	691	57.2	.386	22.10	108	117

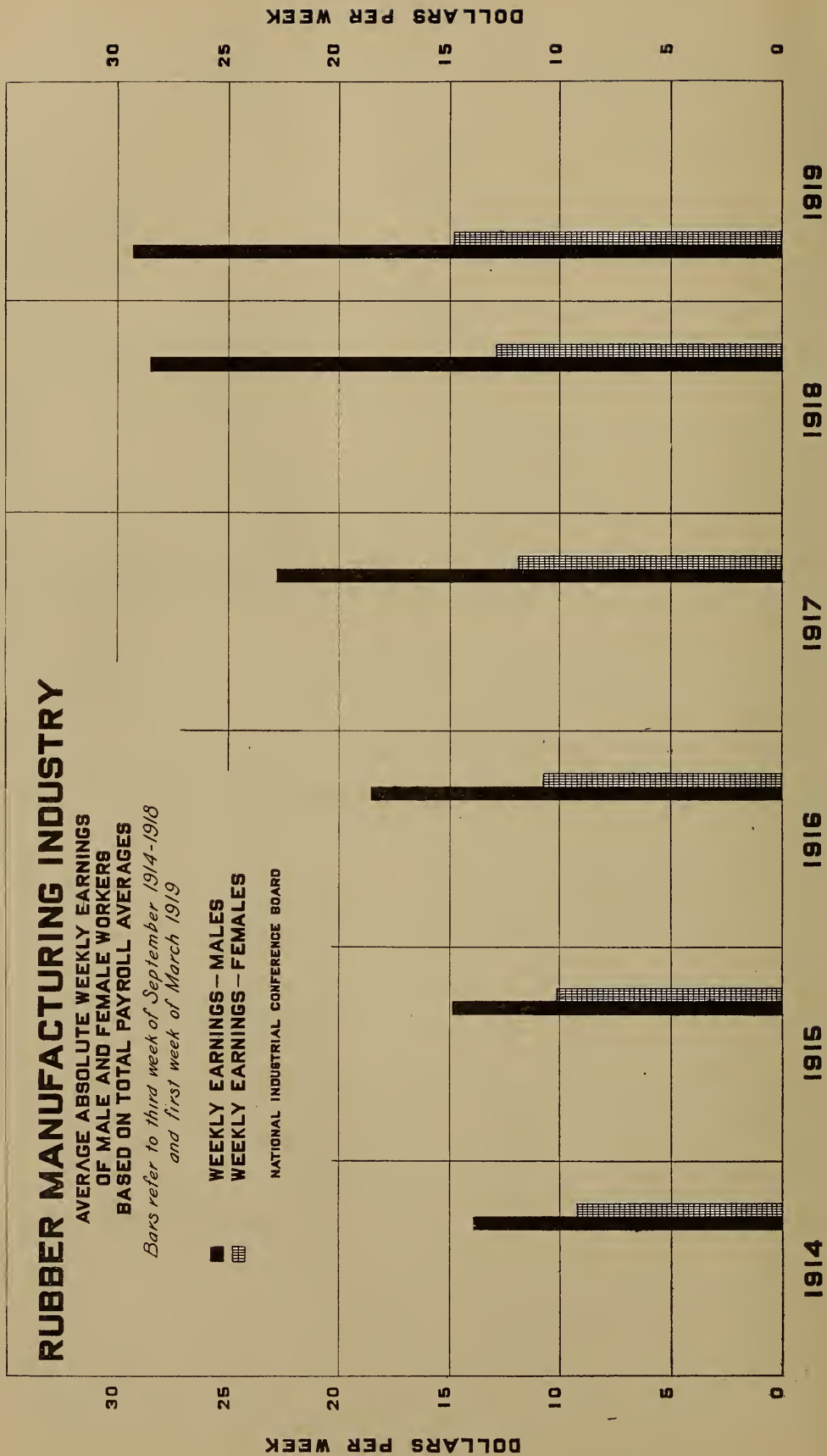
**TABLE 10. Misc. Unskilled Labor—Timeworkers: Males—8 Establishments**

Sept., 1918	877	58.7	.383	22.50	100	100
March, 1919	1,061	58.0	.404	23.42	106	104









## IX

### CHEMICAL MANUFACTURING INDUSTRY

Wage data for the chemical manufacturing industry, covering the period from September, 1914, to March, 1919, were obtained from 12 identical establishments located in the States of New York, New Jersey, Pennsylvania, Ohio, Illinois, Michigan and Alabama, and employing 3,551 male workers in 1914, 6,946 in 1918, and 5,942 in 1919. The increase in employment of male workers in these establishments between 1914 and 1918 represents an addition of 95%. For the entire period, 1914 to 1919, because of a decline of  $14\frac{1}{2}\%$  in the number of workers employed in 1919, the increase was only 67%.

Additional data applying only to 1918 and 1919 were received from four other establishments, located in New York, New Jersey and West Virginia, employing 4,023 and 1,591 males, respectively, in those years. The combination of these data with those received from the 12 establishments reporting for the entire period increased the number of workers represented in this study to 10,969 in 1918 and to 7,533 in 1919.

Very few female workers were employed in the reporting establishments, and consequently no statistics applying to women workers were compiled.

#### HOURLY EARNINGS

##### SEPTEMBER, 1914, TO SEPTEMBER, 1918

Average hourly earnings of all male workers collectively in 12 establishments (Table 1) advanced from 23.2 cents to 44.5 cents between 1914 and 1918, an increase of 92%.

The data applying to this industry did not permit a division of the workers into occupational groups; the only distinction found practicable was that between skilled and unskilled workers. For skilled workers (Table 2) average hourly earnings increased from 30 cents to 52.6 cents in this period, an advance of 75%. Unskilled workers (Table 3) showed an advance of 94%,

hourly earnings increasing from 21 cents in 1914 to 40.8 cents in 1918.

### HOURLY EARNINGS

SEPTEMBER, 1918, TO MARCH, 1919

Hourly earnings in this period showed substantial increases above the September, 1918, averages. The average for the total payroll rose from 44.5 cents in September, 1918, to 49 cents in March, 1919, an increase of 10%. The average of 49 cents in 1919 represents an increase in hourly earnings for the entire period under review of 111%.

For skilled workers, hourly earnings during the six months increased from 52.6 cents to 57.4 cents, an advance of 9%. The latter figure represents an increase for the period September, 1914, to March, 1919, of 91%. For unskilled workers a similar increase of 9% between September, 1918, and March, 1919, was also shown, actual earnings for this group advancing from 40.8 cents to 44.6 cents per hour. For the whole period, hourly earnings of unskilled workers increased 112%.

### WEEKLY EARNINGS

SEPTEMBER, 1914, TO SEPTEMBER, 1918

The average number of hours worked per week was greater in September, 1918, than in September, 1914, and consequently the percentage increases in weekly earnings exceed for the different groups those in hourly earnings. For the total number of workers on the payrolls (Table 1), the average hours worked per week rose from 55.5 to 60.1 and weekly earnings increased 109%, as compared with 92% in hourly earnings. The average hours per week of skilled workers were only slightly larger in 1918, and consequently a smaller divergence was noted, weekly earnings increasing 77% and hourly earnings 75%. In the unskilled class of workers a marked increase from 54.5 to 60.9 occurred in hours per week in this period and the increase in weekly earnings was also proportionately greater than in hourly earnings — 117% as compared with 94%.



## WEEKLY EARNINGS

### SEPTEMBER, 1918, TO MARCH, 1919

The decrease in number of workers employed in March, 1919, as compared with September, 1918, was accompanied by a sharp reduction in the average hours worked per week. The effect of the reduction in time worked upon average weekly earnings, 60.1 hours to 53.5 hours in case of total payroll averages (Table 1), was too great to be offset by even the substantial increase in average hourly earnings, and consequently weekly earnings of the total number on the payrolls decreased from \$26.80 to \$26.20, a decline of 2%. The latter figure represents an increase in weekly earnings for the  $4\frac{1}{4}$ -year period of 104% as compared with 111% in hourly earnings.

For skilled workers the average hours worked decreased between September, 1918, and March, 1919, from 58.2 to 52.5, and weekly earnings decreased from \$30.60 to \$30.10. Weekly earnings of unskilled workers decreased in the same period from \$24.85 to \$24.20, a substantial increase in hourly earnings for the period being offset by a sharp reduction in average hours worked. The percentage increases of skilled and unskilled workers for the  $4\frac{1}{2}$ -year period were 74% and 112%, respectively.

## CHARTS

Chart 25 was constructed from index numbers of hourly and weekly earnings in Table 1, and shows graphically how earnings increased from year to year.

Chart 26 is a bar diagram representing averages of actual hourly earnings.

Chart 27 is also a bar diagram representing the absolute average weekly earnings in the different years.

CHEMICAL MANUFACTURING INDUSTRY: SUMMARIES OF PAYROLL  
AVERAGES FOR ALL MALE WORKERS AND FOR SPECIFIED  
GROUPS, SEPTEMBER, 1914,—MARCH, 1919

(National Industrial Conference Board)

**TABLE 1. Total Payroll Data: Males — 12 Establishments**

One week in:	Total number workers	Average number hrs. per week	Actual earnings		Index numbers	
			Av. hourly	Av. weekly	Hourly earnings	Weekly earnings
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
Sept., 1914	3,551	55.5	\$ .232	\$12.85	100	100
Sept., 1915	3,865	56.0	.237	13.26	102	103
Sept., 1916	4,724	55.8	.289	16.10	125	125
Sept., 1917	6,700	57.1	.359	20.50	155	160
Sept., 1918	6,946	60.1	.445	26.80	192	209
March, 1919	5,942	53.5	.490	26.20	211	204

**TABLE 2. Skilled Workers — Timeworkers: Males — 10 Establishments**

Sept., 1914	979	57.8	.300	17.33	100	100
Sept., 1915	1,163	58.2	.290	16.90	97	98
Sept., 1916	1,492	58.0	.360	20.89	120	121
Sept., 1917	2,186	54.6	.411	22.40	137	129
Sept., 1918	2,371	58.2	.526	30.60	175	177
March, 1919	1,949	52.5	.574	30.10	191	174

**TABLE 3. Unskilled Workers — Timeworkers: Males — 12 Estab.**

Sept., 1914	2,519	54.5	.210	11.44	100	100
Sept., 1915	2,653	54.9	.211	11.59	101	102
Sept., 1916	3,177	54.6	.252	13.77	120	121
Sept., 1917	4,676	58.5	.327	19.14	156	167
Sept., 1918	4,769	60.9	.408	24.85	194	217
March, 1919	3,862	54.2	.446	24.20	212	212

### ADDITIONAL DATA

The addition of data from four establishments furnishing figures for 1918 and 1919 only, as shown by the following tables, had no appreciable effect on the averages for those years. The most important change was that from 44.5 cents to 46.7 cents in the average hourly earnings of male workers as a whole. (See Tables 1 and 4.)

**TABLE 4. Total Payroll Data: Males — 16 Establishments**

Sept., 1918	10,969	60.4	.467	28.21	100	100
March, 1919	7,533	54.4	.490	26.62	105	94

**TABLE 5. Skilled Workers — Timeworkers: Males — 12 Establishments**

Sept., 1918	2,634	59.0	.526	31.10	100	100
March, 1919	2,181	53.8	.568	30.58	108	98

**TABLE 6. Unskilled Workers — Timeworkers: Males — 14 Establishments**

Sept., 1918	4,979	61.4	.409	25.10	100	100
March, 1919	4,069	54.8	.445	24.40	109	97

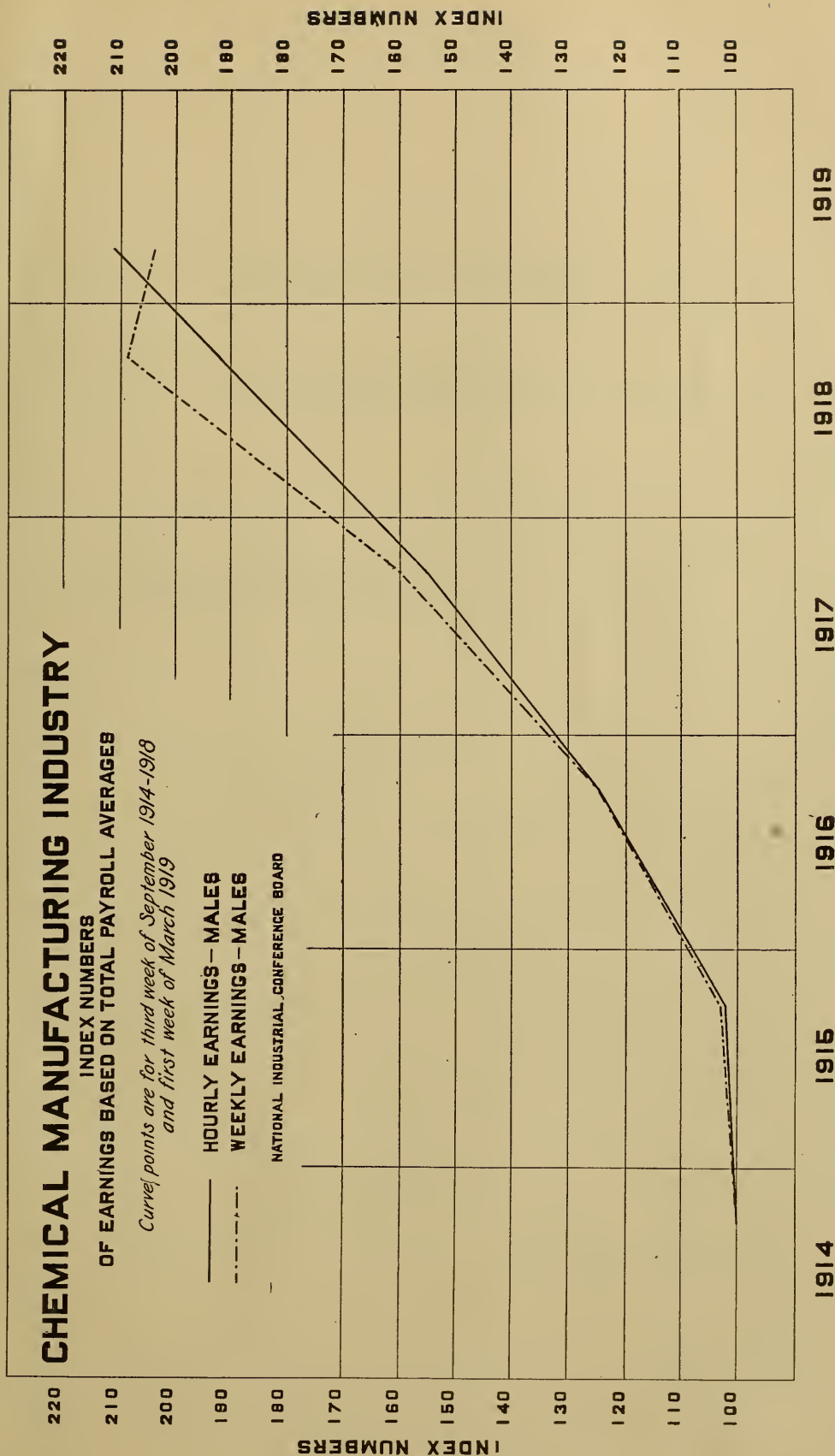
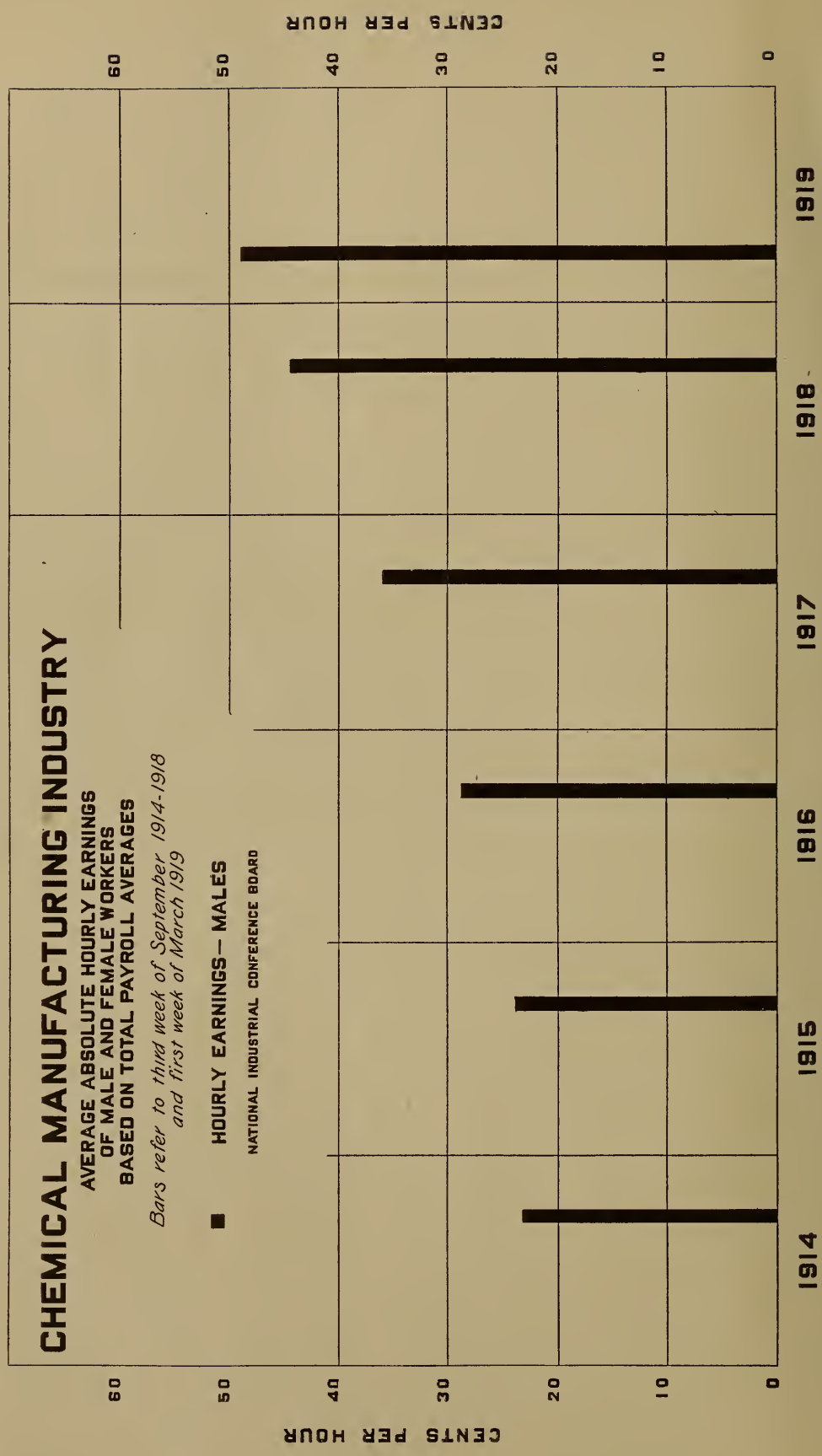
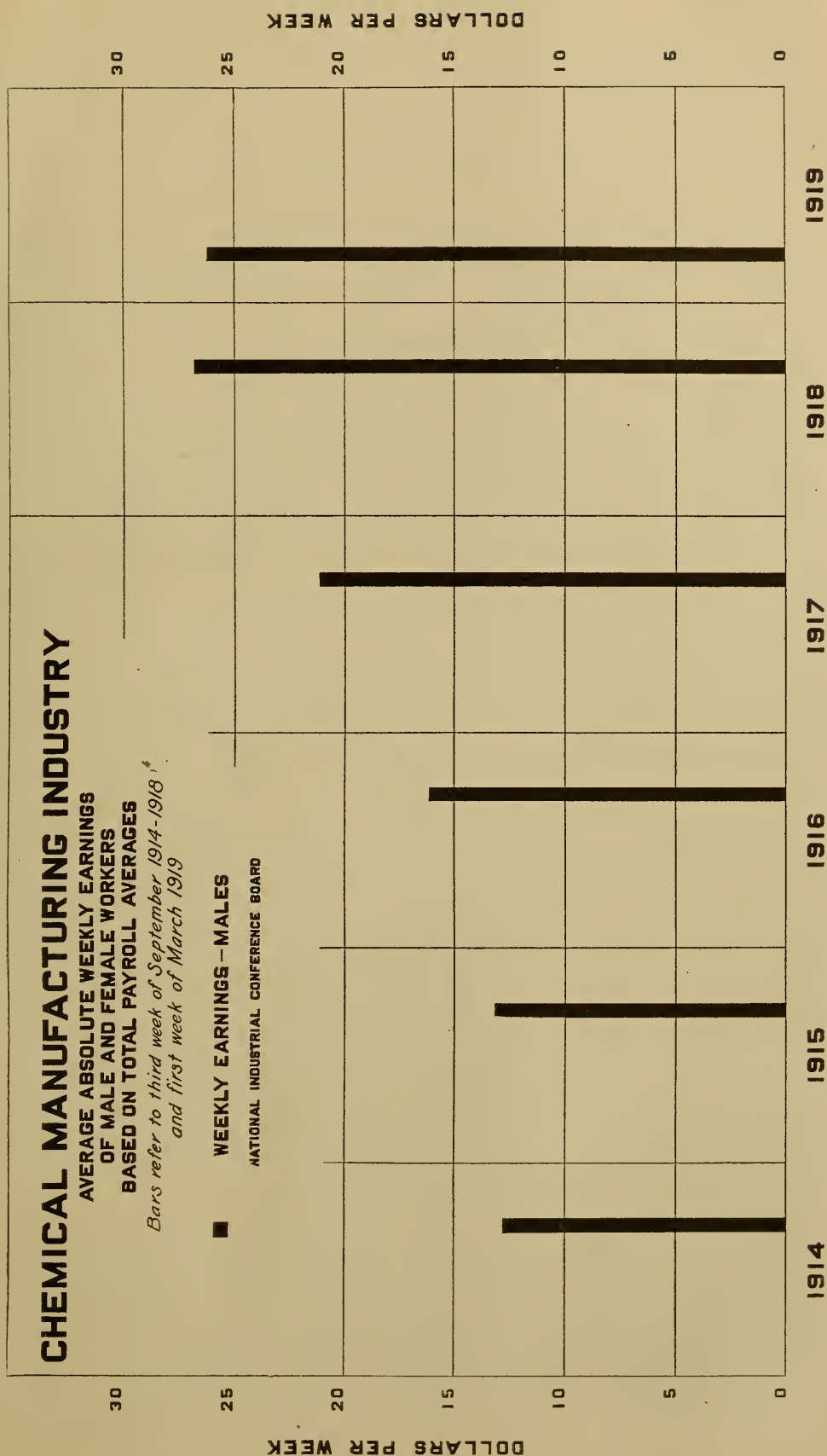


Chart 26, National Industrial Conference Board, Research Report No. 20







## X

### WAGES AND COST OF LIVING

The wage increases discussed in detail in the foregoing chapters may now be briefly considered in connection with corresponding changes in living costs. As has been pointed out, it is beyond the scope of this study to attempt a discussion of the adequacy or inadequacy of wages prevailing in any period with respect to the maintenance of definite standards of living. Such comparisons as may be made must therefore be confined to relative changes, and Charts 28, 29, 30, and 31 have accordingly been prepared on this basis. All curves presented are useful only in showing the extent to which the relation between wages and living costs existing in 1914 was maintained or altered during the war period.

The cost of living curve on each chart is constructed from data already published in a recent report of the Board on this subject<sup>1</sup> and represents changes occurring in the aggregate cost of the main items of a representative wage-earner's budget, namely, food, shelter, clothing, fuel, heat and light, and sundries. These items have been weighted in accordance with the proportion of wage-earner's income normally expended for each group of items.

The wages curves presented on these charts are reproductions of those already charted in previous chapters and refer to changes in earnings of all male and all female workers collectively, in the respective industries covered by the investigation. As explained in the introductory chapter, averages of weekly earnings should in general more accurately reflect the income condition of the wage-earner, and should, therefore, be more suitable than average hourly earnings for making comparisons with changes in the cost of living.

Chart 28 shows that for the 4½-year period ending in March, 1919, the percentage increases in average weekly earnings for male workers in the specified industries were in each case greater than the increase in the cost of living. Thus, whereas the increase in living costs up to that

<sup>1</sup> National Industrial Conference Board Research Report No. 17, p. 29.

time was 61.3%, the percentage increase in wages of male workers in the industries studied were as follows: metal manufacturing, 88%; cotton manufacturing, 71%; wool manufacturing, 62%; silk manufacturing, 93%; boot and shoe manufacturing, 76%; paper manufacturing, 76%; rubber manufacturing, 110%; chemical manufacturing, 104%.

Chart 29 gives similar comparisons in weekly earnings and changes in living costs for female workers in seven industries. Here the percentage increase in wages frequently was less than the percentage increase in the cost of living. Thus, the percentage increases in hourly earnings of women workers in the boot and shoe industry was 60%, in the paper and rubber industries, 64% and 61%, respectively, in the wool manufacturing industry 55%, and in the cotton manufacturing industry, 66%. The increases in weekly earnings of women in the metal and silk manufacturing industries, however, were considerably greater than the percentage increases in the cost of living.

The question may fairly be raised as to how far the cost of living for wage-earners as a whole should be considered as applicable to women alone. This point should be borne in mind in studying the comparisons just presented.

While weekly earnings afford a better indication of the extent to which increases in wages have kept pace with the cost of living from a worker's standpoint, on the other hand changes in hourly earnings afford a better indication of the extent to which the employer has adjusted wages to correspond with changes in living costs. For that reason Charts 30 and 31 have been added, which give similar comparisons of changes in living costs and changes in hourly earnings. These comparisons show that in the case of male workers the increases in hourly earnings, both for the 4-year period and for the 4½-year period, were in every instance greater than the increase in the cost of living up to March, 1919.<sup>1</sup> In the case of women workers, however, the percentage increases in hourly earnings in a few instances were considerably less than

<sup>1</sup> It should be noted in this connection, as shown in Research Report No. 14, that the increase in the cost of living up to November, 1918, was 65.9%, as compared with 61.3% in March, 1919. It may also be noted that the most recent study of the Board — that for July, 1919 — shows an increase of 73%.

the increase in the cost of living. On the other hand, there were several instances, in the case of hourly earnings of both men and women, where the percentage increases were far above the percentage increase in the cost of living.

It may be noted, further, that the charts show, in contrast with the course of weekly earnings, that hourly earnings continued to increase between September, 1918, and March, 1919, in practically every case. The decreases in weekly earnings, as pointed out in the introductory chapter, were largely due to the reduction in manufacturing activity following the signing of the armistice.

These comparisons show, therefore, that wages in most of these industries advanced more, on a percentage basis, than the cost of living. This fact indicates that these workers were in general able to maintain and even improve their standard of living prevailing in 1914. In this connection it should be noted that the largest percentage increases in earnings frequently were in those occupational groups in which absolute earnings in 1914 were relatively low. It should be emphasized, however, that wages and standards of living differed widely within the various industries both in 1914 and in 1919, and that comparisons of relative values afford no means whereby the adequacy of wages or living standards prevailing in either period can be determined. Before a satisfactory conclusion could be reached on these important questions, comprehensive figures of yearly incomes of wage-earners, on the one hand, and a vast amount of information relating to the actual cost of living, on the other hand, should be assembled and carefully analyzed.

In other words, these comparisons simply afford an approximate idea of the extent to which the relationship between wages and living costs existing at the opening of the war was maintained or changed during the succeeding  $4\frac{1}{2}$  years.



Chart 28, National Industrial Conference Board, Research Report No. 20

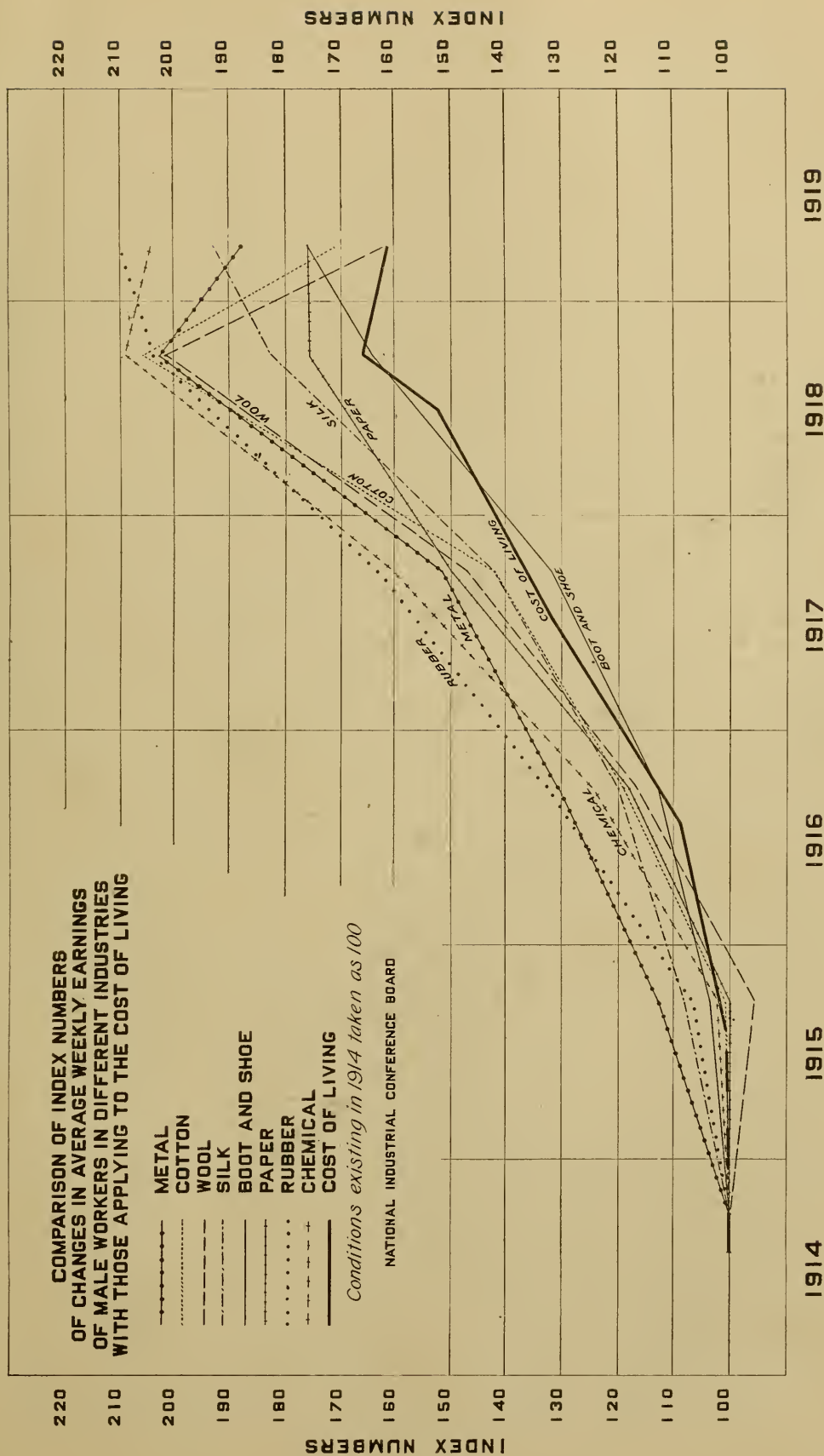


Chart 29, National Industrial Conference Board, Research Report, No. 20

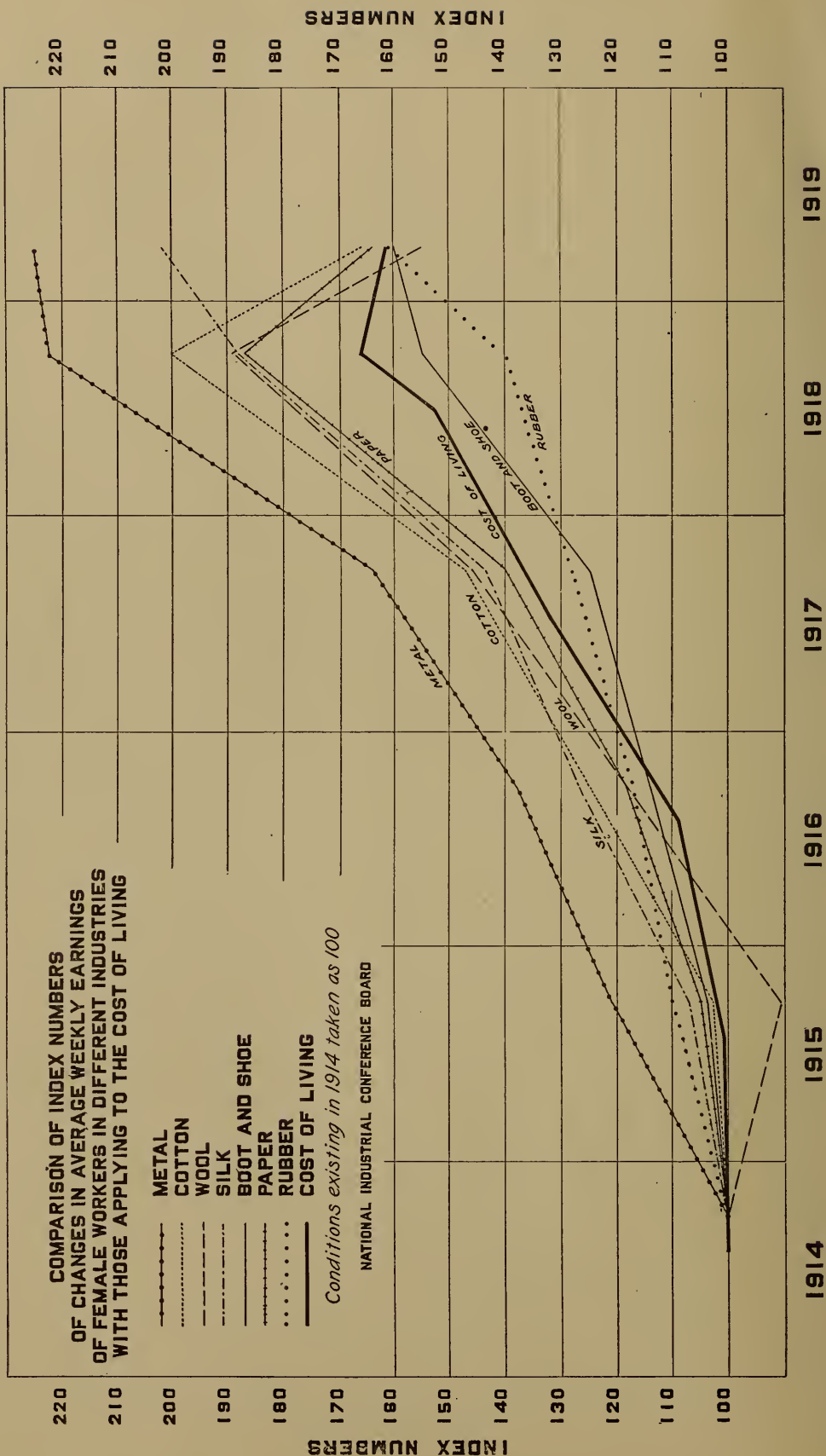


Chart 30, National Industrial Conference Board, Research Report No. 20

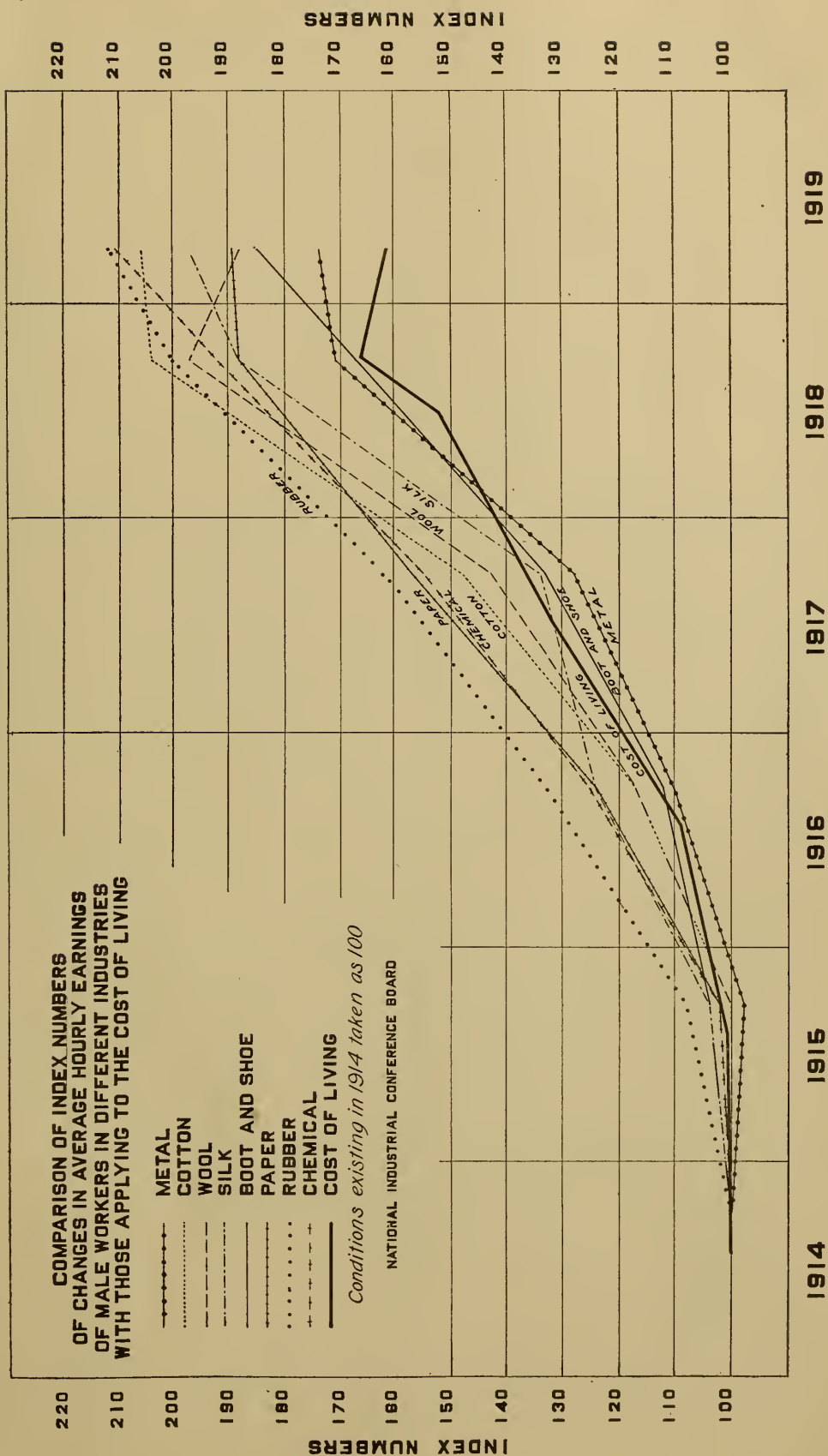
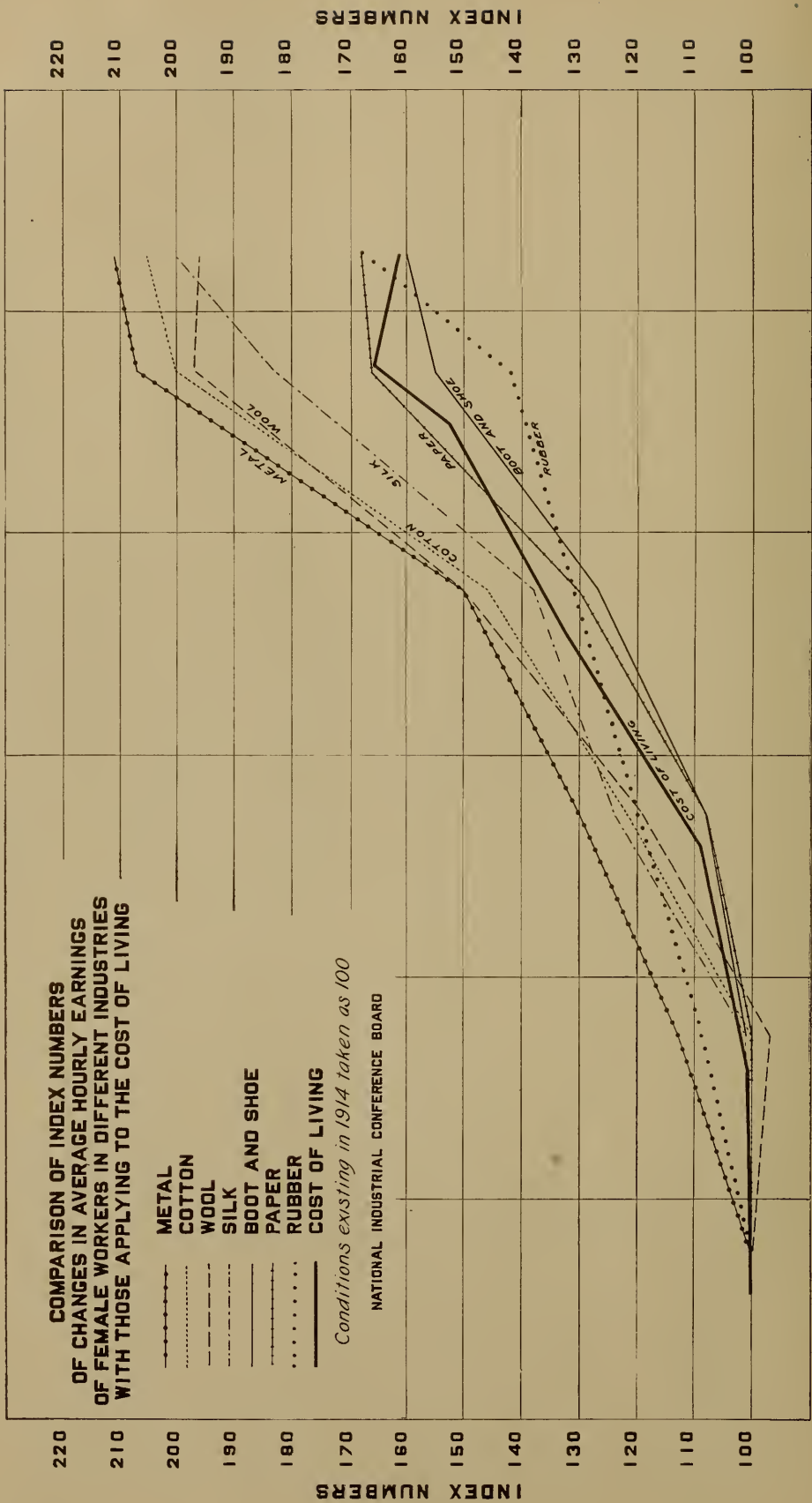


Chart 31, National Industrial Conference Board, Research Report, No. 20





## XI

### GENERAL SUMMARY

The broad results of this investigation have already been summarized in the introductory chapter of this report and the movement of wages in the specified industries has been presented in detail in the respective chapters. In order to secure a more effective comparison of results between different industries and different occupations, a brief statement of some major features is presented in the following pages.

Table 1 gives comparisons of percentage increases in average hourly earnings of male and female workers in the different industries. These percentages are based on averages for all workers collectively in these two classes. They are presented for the September, 1914,—September, 1918, and September, 1914,—March, 1919, periods, respectively, in order that the effects of changes occurring during the last six months of the period covered may be clearly indicated in their proper perspective. Instead of giving index numbers, as in the preceding discussion, merely the percentage increases are here shown. The index numbers can easily be arrived at by adding 100 in each case.

These figures indicate that, with very few exceptions, hourly earnings of male workers increased well over 80% for the entire period covered. In the case of female workers the percentage increases were, on the average, lower than those for men, but in the four industries which included a majority of all women reported upon, they were frequently greater. It will be noted that, with the single exception of women in the wool manufacturing industry, these percentage increases in hourly earnings for the entire 4½-year period were greater than for the 4-year period ending in September, 1918, indicating that during the six months, September, 1918,—March, 1919, hourly earnings of women had in practically every case continued to increase.

Table 2 contains similar comparisons of percentage increases in weekly earnings in these industries. In the

case of male workers the percentage increases for the 4-year period 1914 to 1918 were, in a majority of cases, greater than those in hourly earnings, as given in Table 1. For the entire  $4\frac{1}{2}$ -year period, however, the percentage increases in weekly earnings were in all but one instance less than the corresponding increases in hourly earnings. The reason for this is chiefly to be found in the smaller number of hours worked in March, 1919; to some extent it reflected the generally unsettled condition of industry at that time.

In the case of female workers there was in general less difference between the percentage increases in weekly earnings and those in hourly earnings.

As pointed out in the introduction, it should again be emphasized that weekly earnings are less reliable in showing wage trend than are hourly earnings, since the latter are less likely to be affected by such factors as labor turnover, absenteeism, and overtime.

A summary comparison of the average hourly earnings of male and female workers, respectively, in the industries covered by this report, is presented in Charts 32 and 33. These charts are intended merely to give a bird's-eye view of the relationship of absolute earnings in the several industries, the detailed discussion of which has already been fully presented in the preceding chapters.

A summary comparison of the average hourly earnings of male workers in all the different *occupational* groups for which data have been given in the preceding chapters is presented in Table 3. The groups have been arranged in the order of the magnitude of hourly earnings in the 1919 period. That is to say, the first group noted, namely, stitchers in the boot and shoe industry, showed a greater average hourly rate of earnings than any other group of workers. It is also interesting to note in this table that of the first twenty occupations listed, ten were in the metal manufacturing industry and eight in the boot and shoe industry. These data are also shown graphically in Chart 34.

Table 4 and Chart 35 have been similarly constructed to show comparisons of average hourly earnings of women in different occupational groups.

A general feature of these comparisons, as brought out in preceding chapters, is that the earnings of females were

almost universally smaller than for males in the same industries; this was true for each of the payroll periods included in the survey. The same relationship holds generally true of the specified occupational groups. In the case of weavers in the cotton and woolen industries the average hourly earnings of women differed only slightly from those of men. In these occupations, however, the weekly earnings of men were, as a rule, decidedly larger than those of women. This is chiefly explained by the fact that men worked a greater number of hours.

These comparisons do not permit of any conclusion as to how far the policy of "equal pay for equal work" was in force in the establishments reporting, since the tasks on which women were engaged may not have been the same as those of men. The figures simply give an approximate idea of the actual amount of earnings of women and of men, respectively, in these industries.

#### COMPARATIVE EARNINGS OF TIMEWORKERS AND PIECE- WORKERS

In the preceding chapters reference has frequently been made to the comparative earnings of timeworkers and pieceworkers in certain occupational groups for which comparable data were available. In order to epitomize the experience on this point, Table 5 has been prepared, giving the average hourly earnings in 1914, 1918 and 1919, and the percentage increases for the occupational groups for which such comparison is possible.

This table shows that, in the main, percentage increases were greater for pieceworkers than for timeworkers. This was true for the period September, 1914, to September, 1918, of all groups in the metal industries, all groups in the cotton industry, weavers in the wool and silk manufacturing industries, and cutters and lasters in the boot and shoe industry. For the entire period from September, 1914, to March, 1919, this condition was reversed in a few instances, but in the main the statement holds true that for male pieceworkers percentage increases in earnings were greater than in the case of timeworkers. In the case of female workers percentage increases in hourly earnings of pieceworkers in the period 1914 to 1918 were higher than those of timeworkers in six of the eight groups enumerated.

While in a majority of instances the actual earnings of pieceworkers were also greater than those of timeworkers, the exceptions to this general rule were rather numerous.

The caution should be repeated that definite conclusions as to the productivity of timework and piecework cannot be reached from these figures, since there may have been material differences in the precise nature of the tasks included under a given occupational group. No attempt was made to secure details on this point. Some types of timework do not permit of speeding up to the same extent as is possible in the case of piecework. In any event, whatever the reason, the figures show a substantially greater percentage increase for piecework than for timework.

It should be borne in mind, in studying the figures presented in this report, that they relate only to the industries specified.



TABLE 1: PERCENTAGE INCREASES IN AVERAGE *hourly* EARNINGS OF MALE AND FEMALE WORKERS FOR PERIODS SEPTEMBER, 1914, TO SEPTEMBER, 1918, AND SEPTEMBER, 1914, TO MARCH, 1919, IN SPECIFIED INDUSTRIES

(National Industrial Conference Board)

MALE WORKERS			FEMALE WORKERS		
Industry	Sept. 1914 to Sept. 1918	Sept. 1914 to Mar. 1919	Industry	Sept. 1914 to Sept. 1918	Sept. 1914 to Mar. 1919
Metal . . . . .	71	74	Metal . . . . .	107	111
Cotton . . . . .	104	106	Cotton . . . . .	100	105
Wool . . . . .	97	88	Wool . . . . .	97	96
Silk . . . . .	88	97	Silk . . . . .	83	100
Boots and Shoes	67	85	Boots and Shoes	55	60
Paper . . . . .	88	89	Paper . . . . .	66	68
Rubber . . . . .	100	112	Rubber . . . . .	42	68
Chemical . . . . .	92	111			

TABLE 2: PERCENTAGE INCREASES IN AVERAGE *weekly* EARNINGS OF MALE AND FEMALE WORKERS FOR PERIODS SEPTEMBER, 1914, TO SEPTEMBER, 1918, AND SEPTEMBER, 1914, TO MARCH, 1919, IN SPECIFIED INDUSTRIES

(National Industrial Conference Board)

MALE WORKERS			FEMALE WORKERS		
Industry	Sept. 1914 to Sept. 1918	Sept. 1914 to Mar. 1919	Industry	Sept. 1914 to Sept. 1918	Sept. 1914 to Mar. 1919
Metal . . . . .	103	88	Metal . . . . .	122	125
Cotton . . . . .	106	71	Cotton . . . . .	100	66
Wool . . . . .	102	62	Wool . . . . .	89	55
Silk . . . . .	83	93	Silk . . . . .	88	102
Boots and Shoes	64	76	Boots and Shoes	55	60
Paper . . . . .	76	76	Paper . . . . .	87	64
Rubber . . . . .	104	110	Rubber . . . . .	40	61
Chemical . . . . .	109	104			

TABLE 3: COMPARISON OF AVERAGE HOURLY EARNINGS  
OF MALE WORKERS IN DIFFERENT OCCUPATIONS IN THE  
1914, 1918, 1919 PERIODS

(National Industrial Conference Board)

Occupations	Average Hourly Earnings		
	September 1914	September 1918	March 1919
1. Stitchers (Boot and Shoe—Pw.) . . . . .	\$ .365	\$ .628	\$ .687
2. Coremakers (Metal—Pw.) . . . . .	.304	.688	.651
3. Molders (Metal—Pw.) . . . . .	.309	.666	.642
4. Finishers (Boot and Shoe—Pw.) . . . . .	.330	.540	.638
5. Patternmakers (Metal—Tw.) . . . . .	.380	.603	.638
6. Bottomers (Boot and Shoe—Pw.) . . . . .	.340	.570	.626
7. Molders (Metal—Tw.) . . . . .	.363	.606	.621
8. Lasters (Boot and Shoe—Pw.) . . . . .	.315	.562	.612
9. Assemblers (Metal—Pw.) . . . . .	.307	.558	.603
10. Toolmakers (Metal—Tw.) . . . . .	.356	.557	.594
11. Blacksmiths (Metal—Tw.) . . . . .	.328	.557	.592
12. Upper Leather Cutters (Boot and Shoe—Pw.) . . . . .	.331	.559	.591
13. Machinists (Metal—Tw.) . . . . .	.324	.572	.587
14. Makers (Boot and Shoe—Pw.) . . . . .	.324	.555	.586
15. Machine Operators (Metal—Pw.) . . . . .	.325	.551	.577
16. Skilled Labor (Chemicals—Tw.) . . . . .	.300	.526	.574
17. Sole Leather Cutters (Boot and Shoe—Pw.) . . . . .	.271	.469	.552
18. Sorters (Wool—Pw.) . . . . .	.296	.586	.552
19. Coremakers (Metal—Tw.) . . . . .	.297	.518	.541
20. Upper Leather Cutters (Boot and Shoe—Tw.) . . . . .	.289	.499	.539
21. Assemblers (Metal—Tw.) . . . . .	.307	.502	.530
22. Machine Tenders (Paper—Tw.) . . . . .	.309	.530	.520
23. Loom-fixers (Cotton—Tw.) . . . . .	.262	.514	.505
24. Fitters (Boot and Shoe—Pw.) . . . . .	.274	.482	.486
25. Unskilled Labor (Silk—Tw.) . . . . .	.251	.472	.477
26. Weavers (Wool—Tw.) . . . . .	.252	.521	.471
27. Weavers (Silk—Pw.) . . . . .	.216	.441	.467
28. Machine Operators (Metal—Tw.) . . . . .	.265	.454	.461
29. Weavers (Wool—Pw.) . . . . .	.225	.472	.457
30. Unskilled Labor (Chemicals—Tw.) . . . . .	.210	.408	.446
31. Beatermen (Paper—Tw.) . . . . .	.232	.440	.440
32. Sole Leather Cutters (Boot and Shoe—Tw.) . . . . .	.254	.405	.428
33. Unskilled Labor (Metal—Tw.) . . . . .	.216	.438	.426
34. Foundry Labor (Metal—Tw.) . . . . .	.218	.431	.425
35. Finishers and Cuttermen (Paper—Tw.) . . . . .	.227	.407	.420
36. Weavers (Silk—Tw.) . . . . .	.302	.433	.419
37. Reelers, Winders and Spoolers (Wool—Tw.) . . . . .	.201	.418	.417
38. Calendermen (Paper—Tw.) . . . . .	.204	.403	.414
39. Calendermen (Rubber—Tw.) . . . . .	.225	.375	.409
40. Unskilled Labor (Rubber—Tw.) . . . . .	.205	.388	.409
41. Unskilled Labor (Wool—Tw.) . . . . .	.201	.384	.406
42. Warpers (Silk—Tw.) . . . . .	.226	.375	.406
43. Miscellaneous Labor (Paper—Tw.) . . . . .	.202	.465	.406
44. Spinners (Cotton—Pw.) . . . . .	.190	.422	.401
45. Makers (Rubber—Tw.) . . . . .	.191	.361	.398
46. Spinners (Wool—Tw.) . . . . .	.182	.407	.394
47. Rag Sorters (Paper—Tw.) . . . . .	.206	.405	.392
48. Weavers (Cotton—Pw.) . . . . .	.198	.417	.389

TABLE 3 — (*continued*): COMPARISON OF AVERAGE  
HOURLY EARNINGS OF MALE WORKERS IN DIFFERENT  
OCCUPATIONS IN THE 1914, 1918, 1919 PERIODS

(National Industrial Conference Board)

Occupations	Average Hourly Earnings		
	Sept. 1914	Sept. 1918	March 1919
49. Weavers (Cotton—Tw.) . . . . .	\$ .186	\$ .377	\$ .389
50. Finishers (Wool—Tw.) . . . . .	.215	.391	.385
51. Carders (Wool—Tw.) . . . . .	.177	.376	.384
52. Finishers (Boot and Shoe—Tw.) . . . . .	.217	.357	.383
53. Carders (Cotton—Pw.) . . . . .	.187	.437	.380
54. Lasters (Boot and Shoe—Tw.) . . . . .	.226	.368	.373
55. Spoolers, Warpers, Twisters (Cotton—Tw.) . . . . .	.176	.349	.361
56. Dyers (Wool—Tw.) . . . . .	.175	.351	.356
57. Miscellaneous Labor (Boot and Shoe—Tw.) . . . . .	.215	.317	.352
58. Carders (Cotton—Tw.) . . . . .	.172	.377	.352
59. Unskilled Labor (Cotton—Tw.) . . . . .	.177	.340	.351
60. Openers and Pickers (Cotton—Tw.) . . . . .	.158	.339	.349
61. Spinners (Cotton—Tw.) . . . . .	.166	.339	.343
62. Spinners (Wool—Pw.) . . . . .	.162	.345	.329

TABLE 4: COMPARISON OF AVERAGE HOURLY EARNINGS  
OF FEMALE WORKERS IN DIFFERENT OCCUPATIONS IN  
THE 1914, 1918, 1919 PERIODS

(National Industrial Conference Board)

Occupations	Average Hourly Earnings		
	September 1914	September 1918	March 1919
1. Finishers (Wool—Pw.) . . . . .	\$. 215	\$. 421	\$. 442
2. Weavers (Wool—Pw.) . . . . .	.201	.392	.418
3. Weavers (Silk—Pw.) . . . . .	.154	.322	.353
4. Weavers (Cotton—Pw.) . . . . .	.155	.364	.352
5. Fitters (Boot and Shoe—Pw.) . . . . .	.195	.336	.350
6. Weavers (Cotton—Tw.) . . . . .	.190	.347	.342
7. Reelers, Winders, and Spoolers (Wool—Pw.) . . . . .	.172	.314	.331
8. Spinners (Cotton—Pw.) . . . . .	.141	.306	.323
9. Spinners (Wool—Pw.) . . . . .	.157	.320	.315
10. Carders (Cotton—Pw.) . . . . .	.161	.303	.310
11. Spoolers, Warpers and Twisters (Cotton—Pw.) . . . . .	.150	.288	.302
12. Upper Leather Cutters (Boot and Shoe—Tw.) . . . . .	.173	.271	.296
13. Drawers (Wool—Tw.) . . . . .	.146	.286	.296
14. Warpers (Silk—Pw.) . . . . .	.146	.262	.294
15. Carders (Wool—Tw.) . . . . .	.137	.296	.291
16. Spinners (Cotton—Tw.) . . . . .	.135	.278	.289
17. Reelers, Winders and Spoolers (Wool—Tw.) . . . . .	.129	.277	.283
18. Spinners (Wool—Tw.) . . . . .	.136	.295	.281
19. Finishers (Wool—Tw.) . . . . .	.176	.274	.280
20. Finishers and Cuttermen (Paper—Tw.) . . . . .	.142	.271	.276
21. Fitters (Boot and Shoe—Tw.) . . . . .	.181	.233	.272
22. Rag Sorters (Paper—Tw.) . . . . .	.131	.274	.270
23. Drawers (Cotton—Tw.) . . . . .	.139	.276	.269
24. Spoolers (Cotton—Tw.) . . . . .	.134	.233	.268
25. Winders (Silk—Pw.) . . . . .	.129	.229	.268
26. Rag Sorters (Paper—Pw.) . . . . .	.142	.318	.257
27. Winders (Silk—Tw.) . . . . .	.154	.230	.248
28. Unskilled Laborers (Cotton—Tw.) . . . . .	.130	.254	.237
29. Carders (Cotton—Tw.) . . . . .	.117	.218	.237
30. Quillers (Silk—Tw.) . . . . .	.112	.200	.221



TABLE 5: COMPARISONS OF AVERAGE ACTUAL HOURLY EARNINGS AND OF PERCENTAGE CHANGES IN EARNINGS OF TIME AND PIECEWORKERS

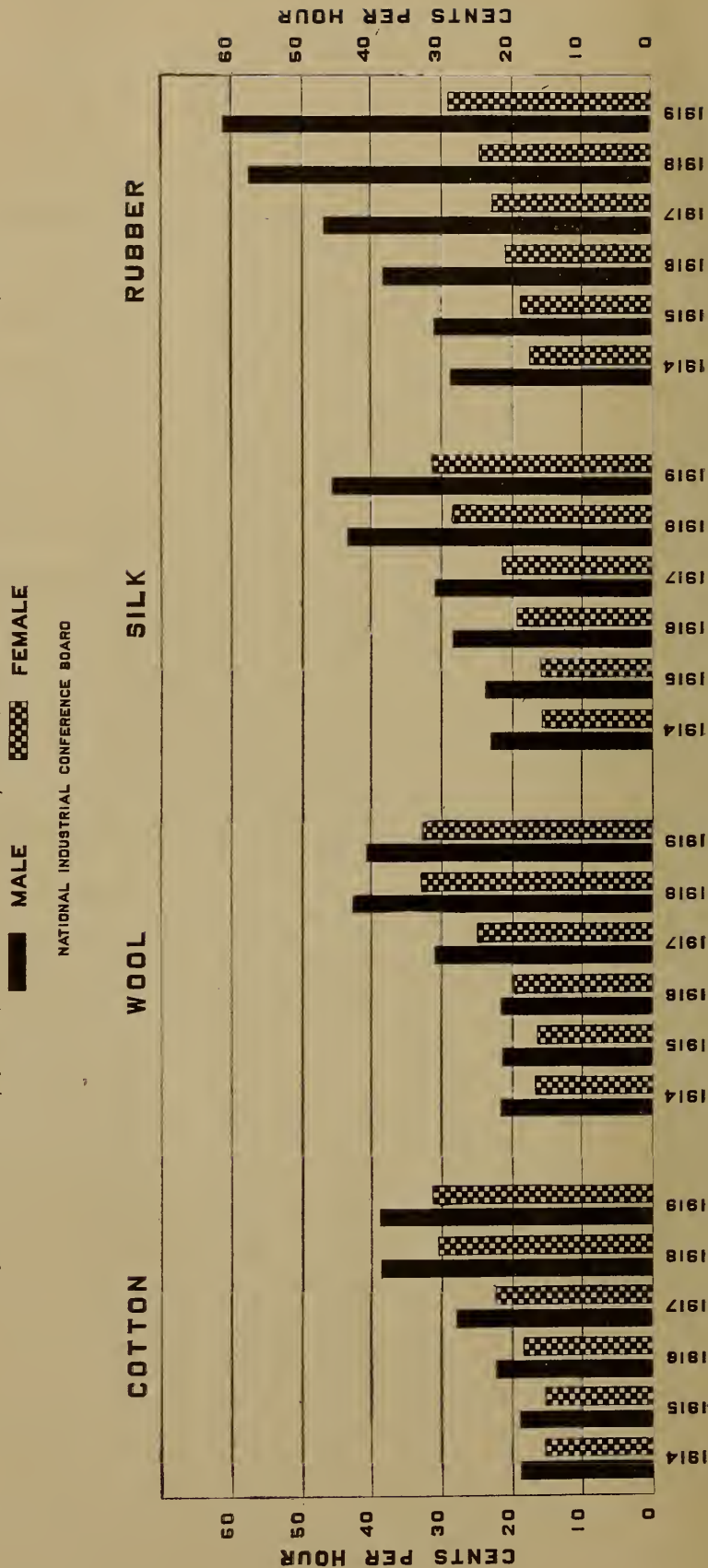
(National Industrial Conference Board)

Industry	Occupation	Males					Females				
		Hourly Earnings			Percentage Increases		Hourly Earnings			Percentage Increases	
		1914	1918	1919	1914 to 1918	1914 to 1919	1914	1918	1919	1914 to 1918	1914 to 1919
M	Coremakers . . . { Time	.297	.518	.541	74	82					
	{ Piece	.304	.688	.651	126	114					
M	Assemblers . . . { Time	.307	.502	.530	64	73					
	{ Piece	.307	.558	.603	81	96					
M	Mach. operators { Time	.265	.454	.461	71	74					
	{ Piece	.325	.551	.577	70	78					
M	Molders . . . . { Time	.363	.606	.621	67	71					
	{ Piece	.309	.666	.642	115	108					
C	Spinning . . . . { Time	.166	.339	.343	105	107	.135	.278	.289	107	114
	{ Piece	.190	.422	.401	122	111	.141	.306	.323	117	129
C	Carding . . . . { Time	.172	.377	.352	119	105	.117	.218	.237	86	103
	{ Piece	.187	.437	.380	134	103	.161	.303	.310	88	93
C	Weavers . . . . { Time	.186	.377	.389	103	109	.190	.347	.342	83	80
	{ Piece	.198	.417	.389	111	97	.155	.364	.352	135	127
W	Spinning . . . . { Time	.182	.407	.394	124	117	.136	.295	.281	117	107
	{ Piece	.162	.345	.329	113	103	.157	.320	.315	104	101
W	Weaving . . . . { Time	.252	.521	.471	107	87					
	{ Piece	.225	.472	.457	110	103					
S	Weaving . . . . { Time	.302	.433	.419	43	39					
	{ Piece	.216	.441	.469	104	116					
S	Winding . . . . { Time						.154	.230	.248	49	61
	{ Piece						.129	.229	.268	78	108
B	Upper leather { Time	.289	.499	.539	73	87					
	cutting . . . { Piece	.331	.559	.591	69	78					
B	Sole leather . . { Time	.254	.405	.428	60	69					
	{ Piece	.271	.469	.552	73	104					
B	Lasting . . . . { Time	.226	.368	.373	63	65					
	{ Piece	.315	.562	.612	78	94					
B	Finishing . . . . { Time	.217	.357	.383	65	77					
	{ Piece	.330	.540	.638	64	93					
B	Fitting . . . . { Time						.181	.233	.272	29	50
	{ Piece						.195	.336	.350	72	80
W	Reeling, Wind- { Time						.129	.277	.283	115	119
	ing, Spooling { Piece						.172	.314	.331	83	92
W	Finishing . . . . { Time						.176	.274	.280	56	59
	{ Piece						.215	.421	.442	96	106

M—Metal; W—Woolen; C—Cotton; S—Silk; B—Boots and Shoes.

# COMPARISONS OF AVERAGE ABSOLUTE HOURLY EARNINGS OF MALE AND FEMALE WORKERS, COLLECTIVELY, IN THE COTTON, WOOL, SILK AND RUBBER MANUFACTURING INDUSTRIES, 1914 TO 1919 INCLUSIVE

Averages derived from payrolls of the third week of September, 1914 and 1918 and first week of March, 1919

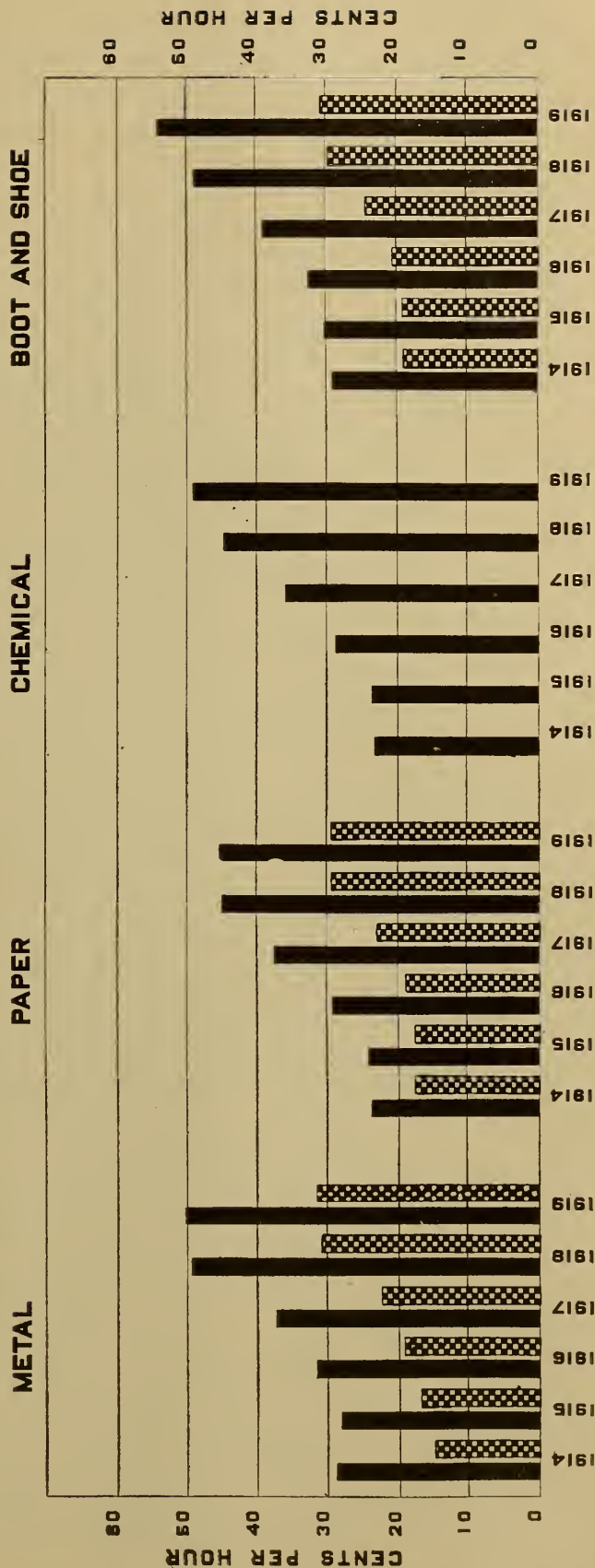


# COMPARISONS OF AVERAGE ABSOLUTE HOURLY EARNINGS OF MALE AND FEMALE WORKERS, COLLECTIVELY, IN THE METAL, PAPER, CHEMICAL AND BOOT AND SHOE MANUFACTURING INDUSTRIES, 1914 TO 1919 INCLUSIVE

Averages derived from payrolls of the third week of September, 1914 and 1918 and first week of March, 1919

MALE FEMALE

NATIONAL INDUSTRIAL CONFERENCE BOARD





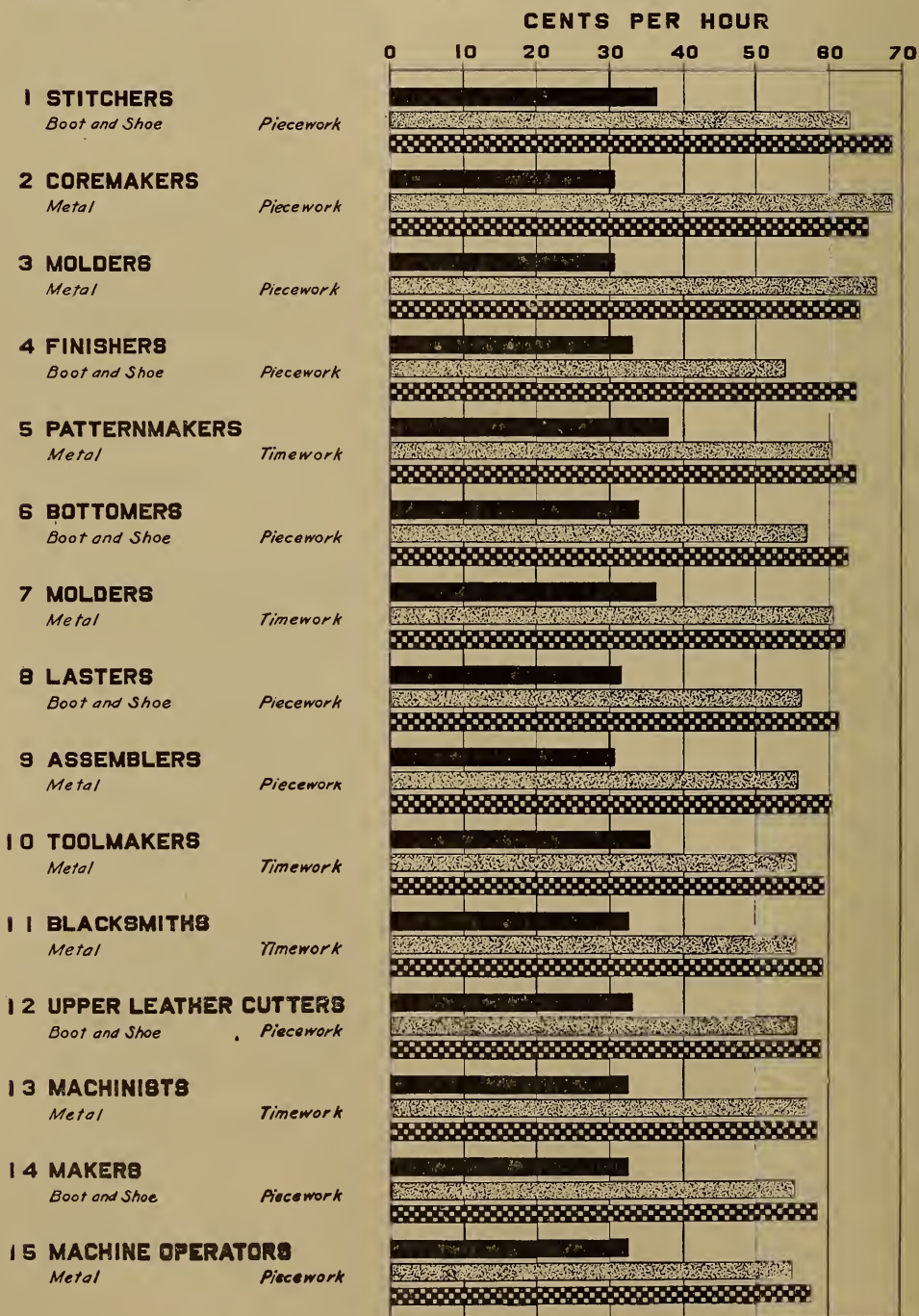
# COMPARISON OF AVERAGE HOURLY EARNINGS OF MALE WORKERS IN DIFFERENT OCCUPATIONS IN THE 1914, 1918 AND 1919 PERIODS

(1919 averages arranged in order of magnitude)

■ 1914    ▨ 1918    ▩ 1919

NATIONAL INDUSTRIAL CONFERENCE BOARD

Averages derived from payrolls of the third week of September 1914 and 1918 and first week of March 1919

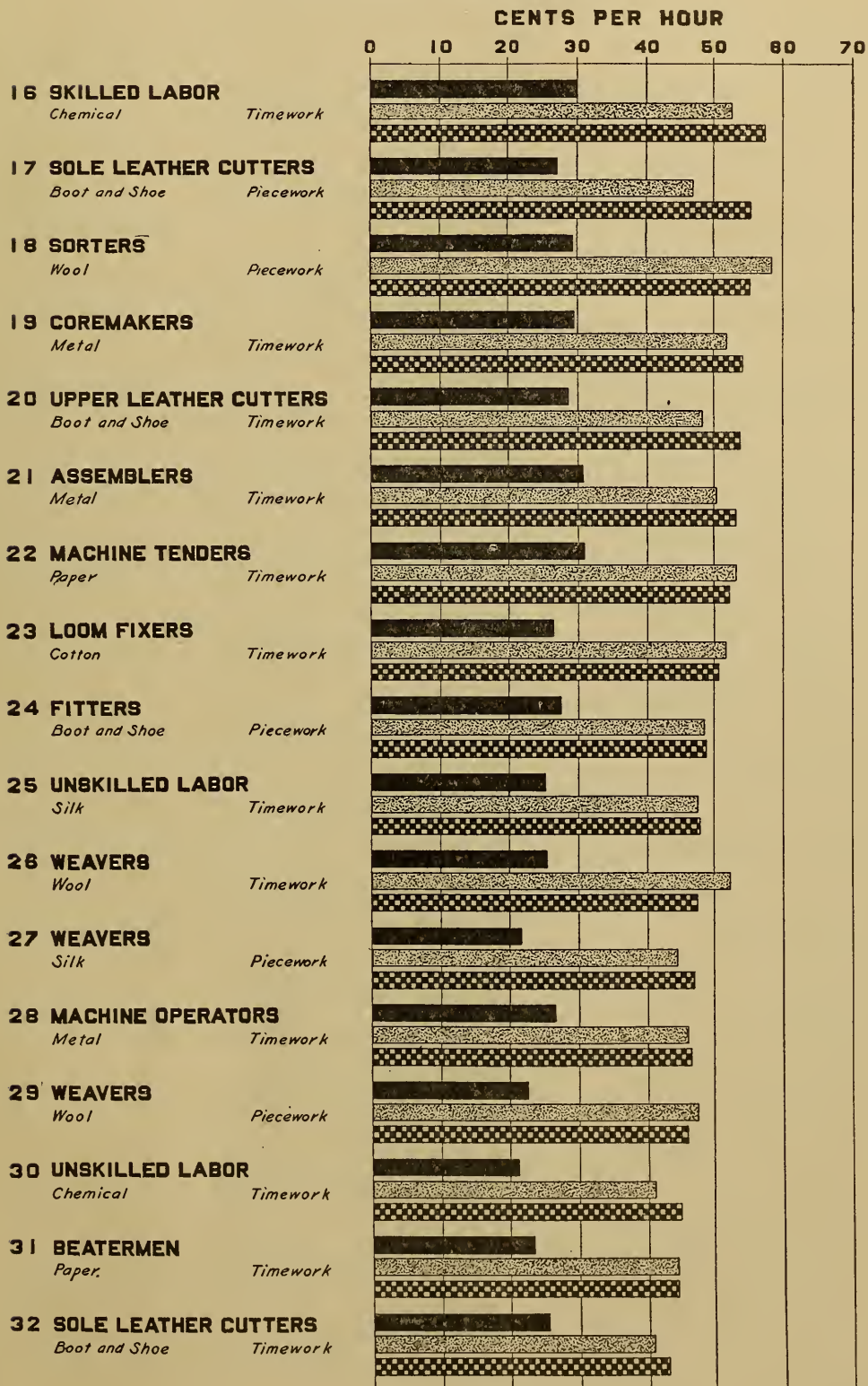




# AVERAGE HOURLY EARNINGS OF MALE WORKERS - CONTINUED

■ 1914    ▨ 1918    ▩ 1919

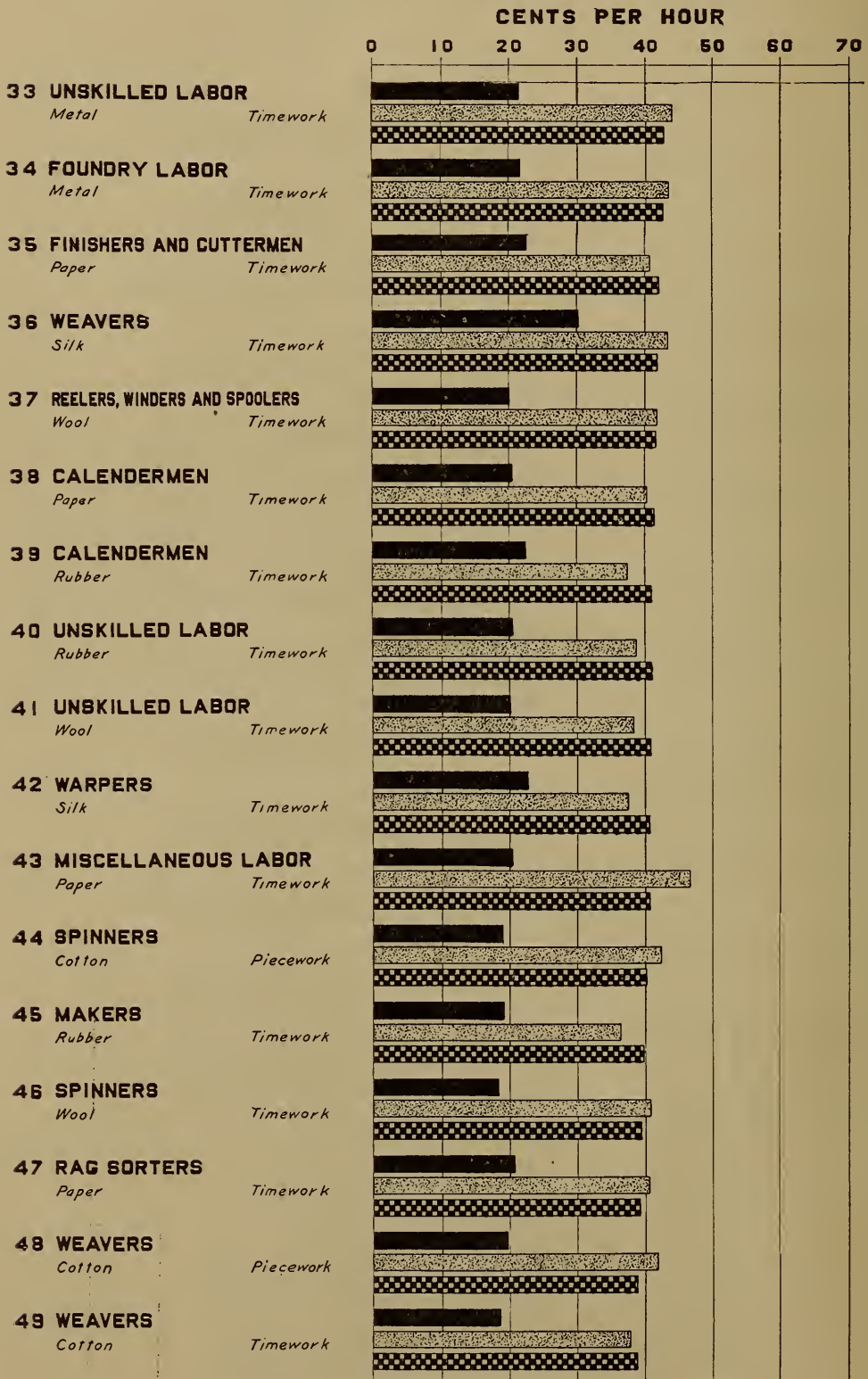
NATIONAL INDUSTRIAL CONFERENCE BOARD



## AVERAGE HOURLY EARNINGS OF MALE WORKERS - CONTINUED

■ 1914    ▨ 1918    ▩ 1919

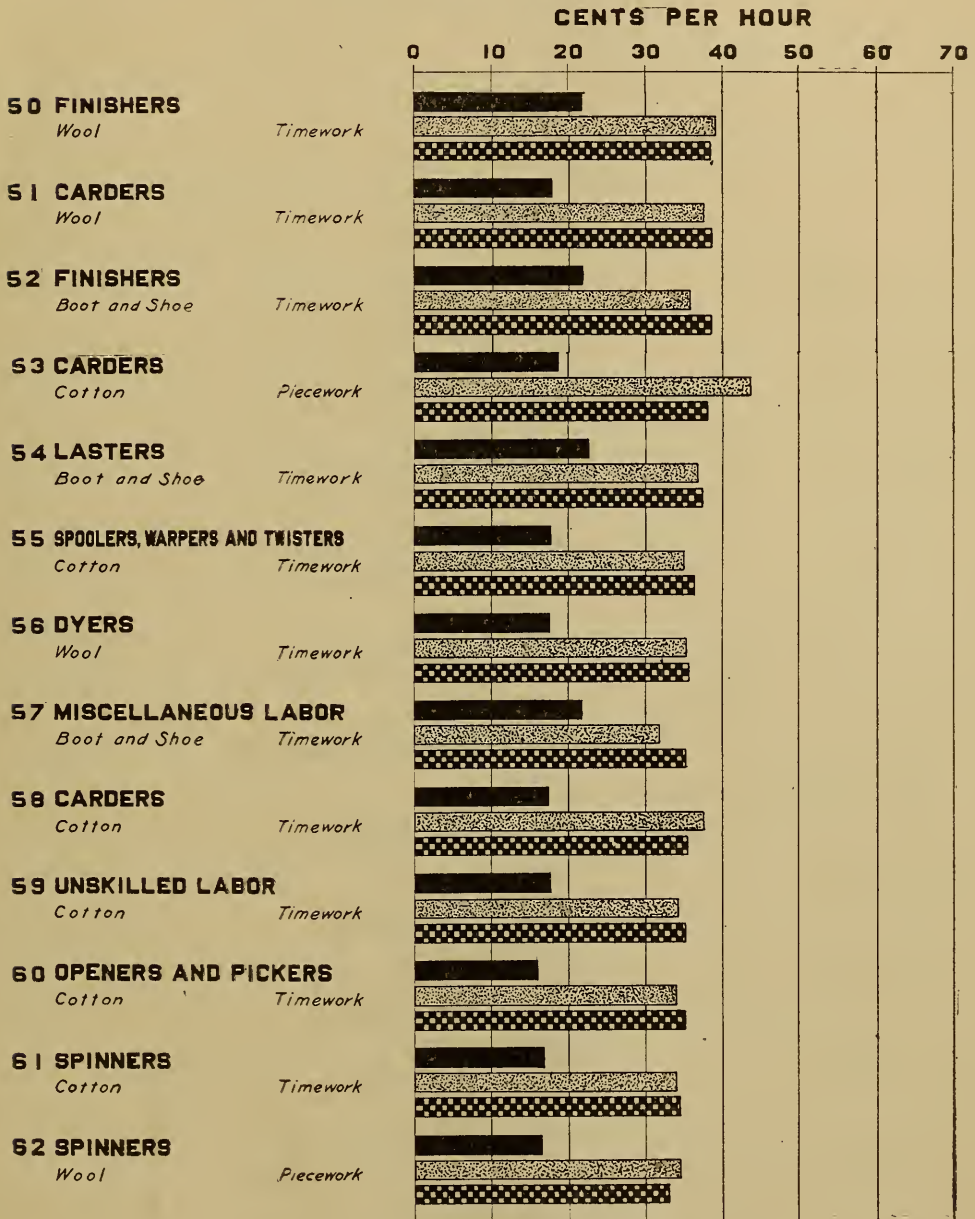
NATIONAL INDUSTRIAL CONFERENCE BOARD



## AVERAGE HOURLY EARNINGS OF MALE WORKERS - CONTINUED

■ 1914    ▨ 1918    ▩ 1919

NATIONAL INDUSTRIAL CONFERENCE BOARD





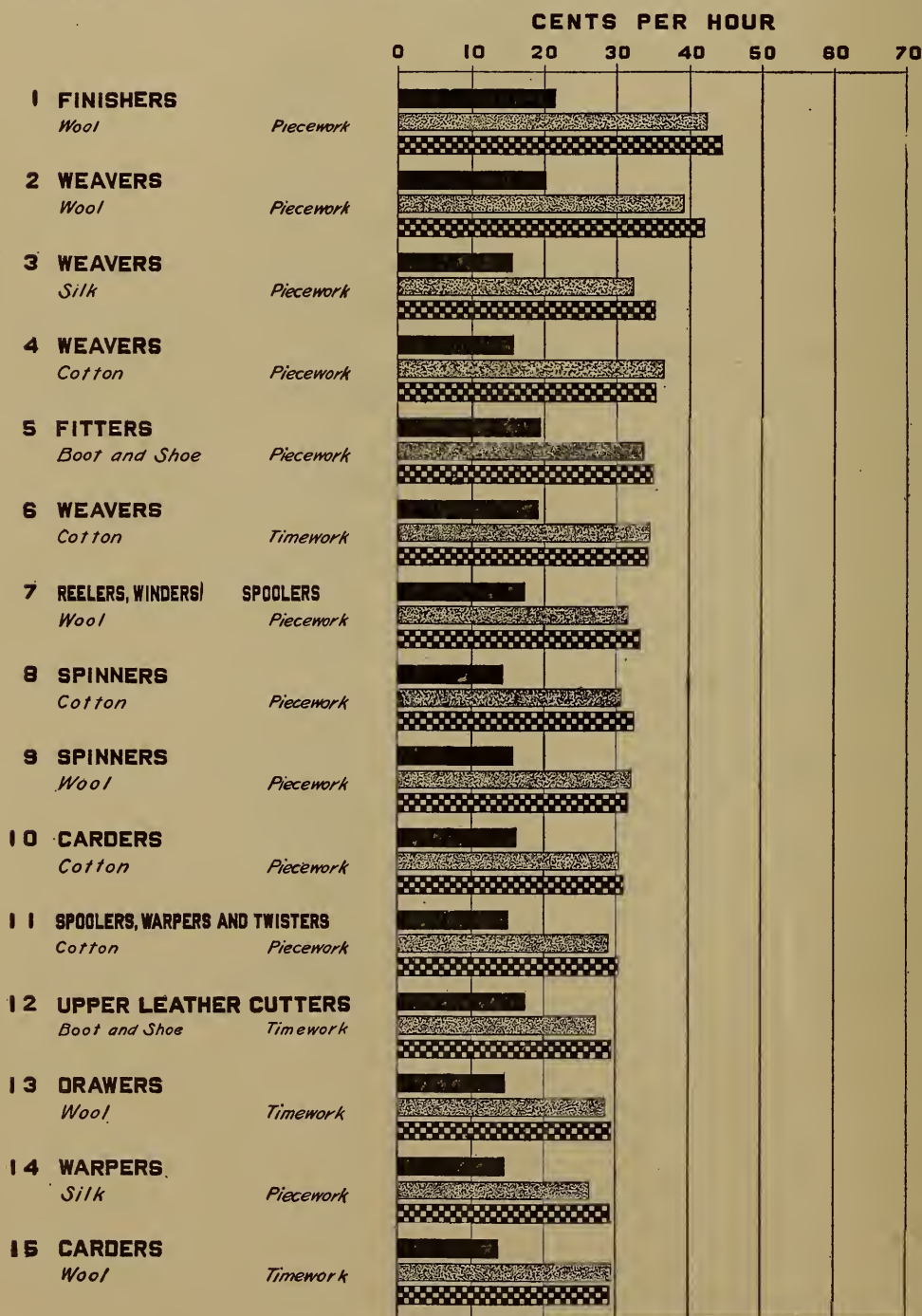
# COMPARISON OF AVERAGE HOURLY EARNINGS OF FEMALE WORKERS IN DIFFERENT OCCUPATIONS IN THE 1914, 1918 AND 1919 PERIODS

(1919 averages arranged in order of magnitude)

■ 1914    ▨ 1918    ▩ 1919

NATIONAL INDUSTRIAL CONFERENCE BOARD

Averages derived from payrolls of the third week of September 1914 and 1918 and first week of March 1919

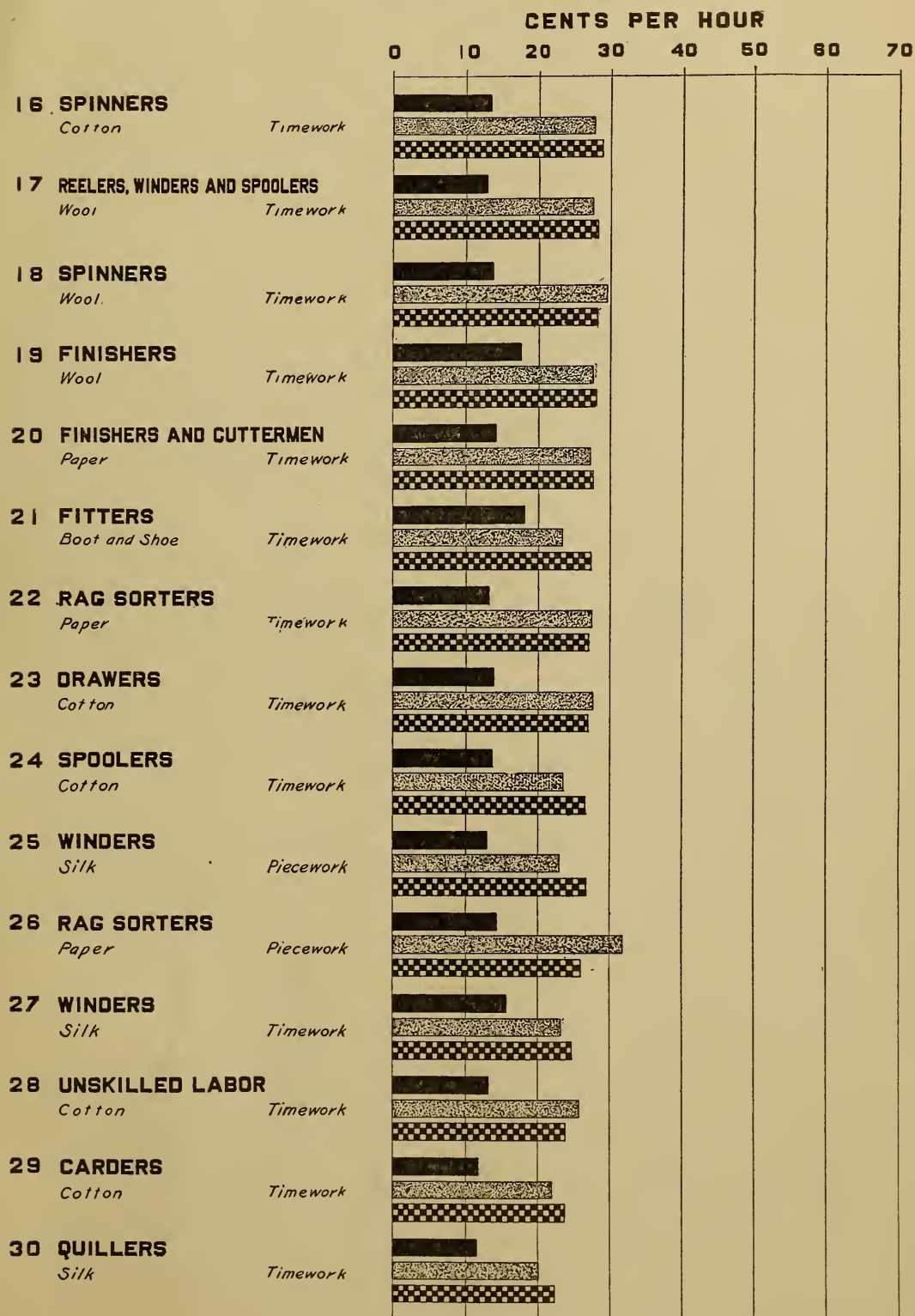




# AVERAGE HOURLY EARNINGS OF FEMALE WORKERS- CONTINUED

■ 1914    ▨ 1918    ▩ 1919

NATIONAL INDUSTRIAL CONFERENCE BOARD



## APPENDIX

In the following tables comparisons of some of the averages of earnings presented in the foregoing chapters have been made with figures assembled by other agencies. These comparisons have been made for the purpose of showing that, although the basis of experience represented in the Board's data for certain industries was relatively narrow, the averages do not differ greatly from those obtained by other investigators dealing with larger numbers of establishments and employees.

The agencies supplying data most suitable for comparison are the United States Bureau of Labor Statistics, the National Metal Trades Association, and the National Association of Cotton Manufacturers. The statistics obtained from these sources differ, however, in certain respects from those assembled in the Board's study. Those of the United States Bureau of Labor Statistics, for example, representing weekly per capita earnings, give figures for the combined earnings of male and female workers. The data prepared by the National Metal Trades Association represents a different period of the year in each case from that upon which the Board's figures were based. The averages derived from the data of the National Association of Cotton Manufacturers represent *full-time* earnings and they furthermore correspond to only three of the six periods represented in the Board's investigation.

Table 1 shows a comparison of average weekly earnings in specified industries of men and women combined, as computed from the National Industrial Conference Board's data with similar figures published by the United States Bureau of Labor Statistics. The comparison includes the cotton, wool, silk, boot and shoe, and paper manufacturing industries. The figures from the two sources probably agree as closely as could be reasonably expected, since averages of weekly earnings always reflect the influence of overtime, absenteeism, etc., and consequently depend upon the number of hours actually worked. It should be observed that the United States Bureau of Labor Statistics averages are in every case

based on substantially larger numbers of establishments and employees than are those of the Board.

Table 2 is a comparison of the Board's averages of hourly earnings in certain occupational groups in metal manufacturing with similar data assembled by the National Metal Trades Association. The latter averages were based on returns in the early part of each year and this probably largely accounts for the fact that they are lower than the Board's corresponding figures in almost every instance up to 1918. This explanation is supported by the fact that the 1919 figures of the two sources based on averages of approximately the same time of year are in closer agreement than those of the earlier years.

Table 3 is a comparison of average hourly earnings in certain occupational groups in cotton manufacturing as assembled by the National Association of Cotton Manufacturers with the Board's averages for these groups. While comparable data were available from this source for only three years, namely, 1914, 1915 and 1916, the figures so far as they go agree fairly well with the Board's averages for those years. Considering the very much larger number of establishments and employees represented in the figures of the National Association of Cotton Manufacturers, and the fact that the wages data refer to *full-time* earnings while those of the Board are averages of actual earnings, the closeness of the agreement is all the more noteworthy.

TABLE I: COMPARISON OF AVERAGE WEEKLY EARNINGS IN SPECIFIED INDUSTRIES OF MALE AND FEMALE WORKERS COMBINED, AS PUBLISHED BY THE UNITED STATES BUREAU OF LABOR STATISTICS WITH CORRESPONDING AVERAGES PREPARED BY THE NATIONAL INDUSTRIAL CONFERENCE BOARD

September 1915, to September, 1918, and March, 1919

Year	NUMBER OF ESTABLISHMENTS		TOTAL NUMBER OF WORKERS		AVERAGE WEEKLY EARNINGS		INDEX NUMBERS	
	U. S. Bureau of Labor Statistics	National Industrial Conference Board	U. S. Bureau of Labor Statistics	National Industrial Conference Board	U. S. Bureau of Labor Statistics	National Industrial Conference Board	U. S. Bureau of Labor Statistics	National Industrial Conference Board
*1915	53	15	<b>Cotton Manufacturing</b>		\$7.95	\$9.00	100	100
1916	50	15	52,408	10,902			125	120
1917	56	15	50,728	10,702	9.90	10.80	146	143
1918	54	15	46,070	11,044	11.65	12.90	210	199
1919	49	15	50,506	10,063	16.70	17.95	177	166
			42,397	11,740	14.10	14.90		
1915	44	20	<b>Wool Manufacturing</b>		9.00	9.75	100	100
1916	44	20	39,557	15,605			133	125
1917	47	20	40,119	17,118	12.00	12.15	168	155
1918	50	20	41,484	16,837	15.10	15.10	218	207
1919	50	20	43,330	16,982	19.65	20.20	189	167
			24,986	14,403	17.00	16.30		
1915	46	29	<b>Silk Manufacturing</b>		10.70	10.05	100	100
1916	44	29	18,283	11,378			105	115
1917	41	29	20,234	11,804	11.20	11.50	113	131
1918	43	29	18,037	11,073	12.10	13.15	151	171
1919	39	29	13,127	10,246	16.15	17.20	153	183
			12,668	10,717	16.35	18.35		
1915	65	14	<b>Boot and Shoe Manufacturing</b>		12.45	13.50	100	100
1916	62	14	47,180	10,864			103	107
1917	65	14	48,501	12,432	12.80	14.50	119	121
1918	70	14	47,238	11,681	14.78	16.40	151	151
1919	75	14	52,131	11,653	18.80	20.40	162	169
			63,583	12,086	20.10	21.55		
1916	48	32	<b>Paper Manufacturing</b>		13.87	14.40	100	100
1917	48	32	25,766	10,570			114	127
1918	54	32	27,344	10,409	15.85	18.27	155	150
1919	56	32	25,474	10,771	21.55	21.65	156	149
			25,968	10,565	21.65	21.45		

\*U. S. Bureau of Labor Statistics Data in 1915 are for October.

NOTE: U. S. Bureau of Labor Statistics data obtained as follows:

October 1915.	Monthly Labor Review,	December, 1916
September 1916	" "	December, 1916
" 1917	" "	December, 1917
" 1918	" "	December, 1918
March 1919	" "	June, 1919

In chapters on "Employment in Selected Industries."



TABLE 2: COMPARISON OF AVERAGE HOURLY EARNINGS IN SPECIFIED OCCUPATIONS COMPUTED FROM DATA ASSEMBLED BY THE NATIONAL METAL TRADES ASSOCIATION WITH AVERAGES PREPARED BY THE NATIONAL INDUSTRIAL CONFERENCE BOARD

1916, 1917, 1918, and 1919

Year	NUMBER OF EMPLOYEES		AVERAGE HOURLY EARNINGS		INDEX NUMBERS	
	National Metal Trades Association	National Industrial Conference Board	National Metal Trades Association	National Industrial Conference Board	National Metal Trades Association	National Industrial Conference Board
1916	796	521	<b>Pattern Makers</b> \$ .424	\$ .409	100	100
1917	876	488	.414	.495	98	121
1918	772	419	.489	.603	116	147
1919	1,411	429	.645	.638	152	156
1916	1,301	843	<b>Tool Makers</b> .385	.402	100	100
1917	1,254	1,155	.419	.456	109	114
1918	1,232	1,332	.487	.557	127	139
1919	3,415	907	.600	.594	156	148
1916	3,813	4,787	<b>Machinists</b> .318	.373	100	100
1917	4,433	5,105	.351	.436	110	117
1918	4,312	5,503	.409	.572	129	153
1919	13,898	5,235	.482	.587	152	157
1916	572	290	<b>Blacksmiths</b> .370	.385	100	100
1917	593	412	.413	.468	112	122
1918	563	542	.437	.557	118	144
1919	1,857	269	.553	.592	150	154
1916	8,512	3,001	<b>Machine Operators</b> .324	.299	100	100
1917	9,138	3,187	.324	.346	100	116
1918	9,480	3,176	.374	.454	115	152
1919	23,760	2,352	.442	.461	136	154

NOTE: Data from National Metal Trades Association apply to the early part of each year; those of the National Industrial Conference Board are for September in 1916 to 1918 and for March in 1919.

TABLE 3: COMPARISON OF AVERAGE HOURLY EARNINGS IN CERTAIN OCCUPATIONS IN COTTON MANUFACTURING DERIVED FROM FULL-TIME EARNINGS DATA ASSEMBLED BY THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS WITH ACTUAL AVERAGE EARNINGS DATA COMPILED BY THE NATIONAL INDUSTRIAL CONFERENCE BOARD

1914, 1915, and 1916

Year	NUMBER OF ESTABLISHMENTS		TOTAL NUMBER WORKERS		AVERAGE HOURS PER WEEK		AVERAGE HOURLY EARNINGS		INDEX NUMBERS	
	National Association of Cotton Manufacturers	National Industrial Conference Board	National Association of Cotton Manufacturers	National Industrial Conference Board	National Association of Cotton Manufacturers	National Industrial Conference Board	National Association of Cotton Manufacturers	National Industrial Conference Board	National Association of Cotton Manufacturers	National Industrial Conference Board
1914 . . . . .	79	8	2,575	130	Drawing. Females 55.7	51.6	\$ .146	\$ .139	100	100
1915 . . . . .	76	8	2,506	151	55.7	48.9	.146	.137	100	98
1916 . . . . .	99	8	3,639	174	55.7	51.0	.174	.167	119	120
1914 . . . . .	90	13	6,906	1,286	Spinning. Females 56.9	50.6	.132	.140	100	100
1915 . . . . .	88	13	6,766	1,239	56.8	52.8	.132	.143	100	102
1916 . . . . .	105	13	7,775	1,195	57.2	52.2	.148	.178	112	127
1914 . . . . .	89	14	11,183	1,208	Weaving. Females 55.8	51.4	.167	.161	100	100
1915 . . . . .	86	14	11,066	1,404	55.8	52.0	.168	.177	101	110
1916 . . . . .	103	14	11,590	1,320	55.7	53.0	.200	.186	120	116
1914 . . . . .	31	8	703	804	Spinning. Males 55.0	52.5	.200	.174	100	100
1915 . . . . .	38	8	698	857	54.8	52.6	.194	.177	97	102
1916 . . . . .	64	8	1,041	902	56.6	52.0	.213	.212	107	122
1914 . . . . .	89	13	9,755	1,374	Weaving. Males 56.8	51.5	.176	.195	100	100
1915 . . . . .	86	13	9,518	1,667	56.7	52.2	.176	.190	100	98
1916 . . . . .	102	13	10,410	1,490	56.8	53.4	.204	.237	116	122
1914 . . . . .	90	10	2,491	251	Loom Fixing. Males 56.8	52.7	.233	.262	100	100
1915 . . . . .	87	10	2,441	293	56.7	52.7	.234	.262	100	100
1916 . . . . .	104	10	2,804	288	56.8	52.8	.269	.312	116	119

NOTES: Averages of National Association of Cotton Manufacturers are for October; those for the National Industrial Conference Board are for September. Average hours per week in National Association of Cotton Manufacturers data refer to full-time hours. Average hours per week in National Industrial Conference Board data refer to average actual hours. Average hourly earnings in National Association of Cotton Manufacturers data are based on average hourly rates. Average hourly earnings in National Industrial Conference Board data are based on actual earnings.

# Publications of the National Industrial Conference Board

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- Research Report No. 1.* WORKMEN'S COMPENSATION ACTS IN THE UNITED STATES — THE LEGAL PHASE. 60 pages. April, 1917. REVISED, August, 1919. \$1.00.
- Research Report No. 2.* ANALYSIS OF BRITISH WARTIME REPORTS ON HOURS OF WORK AS RELATED TO OUTPUT AND FATIGUE. 58 pages. November, 1917. \$1.00.
- Research Report No. 3.* STRIKES IN AMERICAN INDUSTRY IN WARTIME. 20 pages. March, 1918. 50 cents.
- Research Report No. 4.* HOURS OF WORK AS RELATED TO OUTPUT AND HEALTH OF WORKERS — COTTON MANUFACTURING. 64 pages. March, 1918. \$1.00.
- Research Report No. 5.* THE CANADIAN INDUSTRIAL DISPUTES INVESTIGATION ACT. 28 pages. April, 1918. 50 cents.
- Research Report No. 6.* SICKNESS INSURANCE OR SICKNESS PREVENTION? 24 pages. May, 1918. 50 cents.
- Research Report No. 7.* HOURS OF WORK AS RELATED TO OUTPUT AND HEALTH OF WORKERS — BOOT AND SHOE INDUSTRY. 76 pages. June, 1918. \$1.00.
- Research Report No. 8.* WARTIME EMPLOYMENT OF WOMEN IN THE METAL TRADES. 80 pages. July, 1918. \$1.00.
- Research Report No. 9.* WARTIME CHANGES IN THE COST OF LIVING — JULY, 1914, TO JUNE, 1918. 82 pages. August, 1918. \$1.00.
- Research Report No. 10.* ARBITRATION AND WAGE-FIXING IN AUSTRALIA. 52 pages. October, 1918. \$1.00.
- Research Report No. 11.* THE EIGHT-HOUR DAY DEFINED. 12 pages. December, 1918. 50 cents.
- Research Report No. 12.* HOURS OF WORK AS RELATED TO OUTPUT AND HEALTH OF WORKERS — WOOL MANUFACTURING. 69 pages. December, 1918. \$1.00.
- Research Report No. 13.* REST PERIODS FOR INDUSTRIAL WORKERS. 55 pages. January, 1919. \$1.00.
- Research Report No. 14.* WARTIME CHANGES IN THE COST OF LIVING — JULY, 1914, TO NOVEMBER, 1918. 33 pages. February, 1919. \$1.00.
- Research Report No. 15.* PROBLEMS OF INDUSTRIAL READJUSTMENT IN THE UNITED STATES. 58 pages. February, 1919. \$1.00.
- Research Report No. 16.* HOURS OF WORK AS RELATED TO OUTPUT AND HEALTH OF WORKERS — SILK MANUFACTURING. 54 pages. March, 1919. \$1.00.
- Research Report No. 17.* WARTIME CHANGES IN THE COST OF LIVING — JULY, 1914, TO MARCH, 1919. 31 pages. May, 1919. \$1.00.
- Research Report No. 18.* HOURS OF WORK AS RELATED TO OUTPUT AND HEALTH OF WORKERS — METAL MANUFACTURING INDUSTRIES. July, 1919. \$1.00.
- Research Report No. 19.* CHANGES IN THE COST OF LIVING — July, 1914, to July, 1919. 31 pages. September, 1919. \$1.00.
- Research Report No. 20.* WARTIME CHANGES IN WAGES — (September, 1914, — March, 1919). 128 pages. September, 1919. \$1.50.
- Research Report No. 21.* WORKS COUNCILS IN THE UNITED STATES. 135 pages. October, 1919. \$1.50.

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